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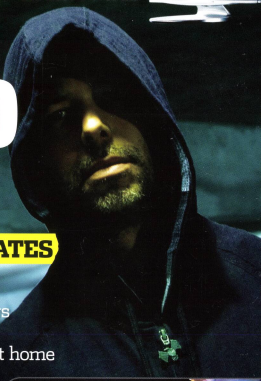
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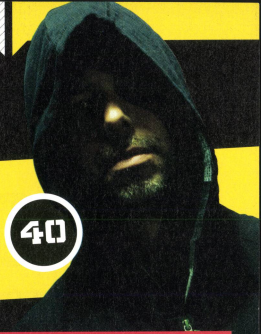
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THE BLACK HAT ISSUE!

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06 editorial

TONY SARNO



IT'S TIME WE BRUSHED ASIDE THE STEREOTYPES AND LOOKED AT HOW BITTORRENT CAN BE USED LEGITIMATELY

It's always intrigued me that there are technologies one does not talk about in polite company. Admit to using BitTorrent and similar downloading technologies and you suddenly become a pariah, a pirate depriving content owners of their living and inviting all kinds of malware to infect your machine and the network. This annoys me because the BitTorrent protocol, which allows the distribution of massive multi-gigabyte files, is one of the great technology inventions, and it's even more important now that the high-definition technology in home theatre is starting to cry out for content that makes full use of it. BitTorrent has become demonised because it's widely used to download pirated movies, music and software, but it's also technology we'll need to consider as the home theatre moves into the high-definition era. A concurrent revolution, in which HD video cameras are becoming ultra-affordable, is creating a generation of videomakers and internet television stations who are creating high-quality video content and distributing it via the net. At the same time, a crackdown by anti-piracy authorities on sites with illegal torrents has forced some to go legitimate: think Mininova or Pirate Bay. The end result is there is more and more legal content on the net that's free, high quality, and which we want to watch on our home theatre HDTVs. It's time we brushed aside the stereotypes and looked at how the very tools favoured by the pirates can be used for legitimate reasons. Our cover story on page 40 also provides tips on how legal content can be played and stored in your home theatre.

On the horizon is a development that one day may deliver HD movies to your home in seconds, but it's only one year into its eight-year delivery schedule. I'm talking about the national broadband network. In light of the recent dramas over the home insulation scheme, we've looked at how this similarly government-run but infinitely more complex project is doing. So far, so good, according to the story's author, David Braue. Fingers crossed.

tsarno@acpmagazines.com.au

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APC APRIL AWARDS



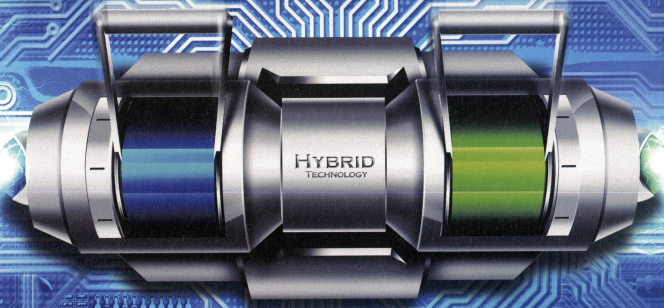
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TRY OTHER PHONES NOW

While Microsoft's Windows Phone 7 won't be available until the end of the year, you can try other phones on a web site that lets you navigate their interface. Tryphone.com lists simulations of the latest phones on the market and lets you navigate through their screens and buttons via your computer. ***www.tryphone.com*** is a US site, but several of the major phones in the Australian market are on it.



PURE
HTC's PURE is one of the first phones to get Windows Phone 7. Sadly, it won't be available in Australia anytime soon.

MARKETPLACE
Windows Marketplace for Mobile: Mobile Operator Showcase Screen.

Microsoft's iPhone killer (another one!)

Microsoft is overhauling its mobile OS in a 'last chance' catch-up to Apple and Google.

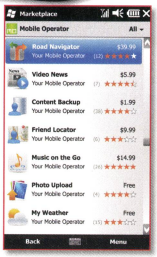
Microsoft has lifted the covers off a radical revamp to its mobile OS, known as Windows Phone 7.

The good news: Windows Phone 7 is easily the most impressive version to date of Microsoft's decade-old mobile OS. In fact, so extensive is this overhaul that the OS is "basically a new entrant into the market," says Andy Lees, senior vice-president of Microsoft's Mobile Communications Business. The bad news? You won't be able to get your paws on a smartphone powered by Windows Phone 7 until the end of this year.

That's a long run-up for Microsoft, its hardware partners (including HTC, Samsung, LG, HP and Dell and Sony Ericsson) and launch carriers, which in Australia are Telstra and Vodafone. But there's no doubt that Microsoft has finally delivered the Windows mobile OS we've been waiting for. In the process, Microsoft has raised the bar for all the other smartphone operating systems.

The streamlined UI in Windows Phone 7 is large, lush and finger-friendly for phones with multi-touch screens, with delightfully smooth transitions. The home screen is divided into widgets called 'Live Tiles' which show real-time content from contacts, applications and services. Tapping any tile takes the user into the relevant main screen, such as a calendar, or a 'hub' which brings together related content from the web, applications and services into a single view. These hubs will include People, Pictures, Games, Music & Video and Office. While the first two are fairly obvious, the Games hub taps into the Xbox Live service, while Music & Video draws its DNA from Microsoft's Zune player.

David Flynn



TOP 10

...SIGNS THAT GOOGLE IS TAKING OVER THE WORLD

1 GOOGLE BUZZ
Google's new Gmail social networking service is out to get Twitter and Facebook.

2 GOOGLE MAPS
Google is photographing inside buildings in the US for a future version of Google Maps.

3 GOOGLE VOICE
Google's IP-routed free call service is taking revenue from traditional carriers in the US.

4 GOOGLE BOOKS
Google is grabbing the rights to millions of "orphan" works and out-of-print books as it amasses the world's biggest digital library.

5 GOOGLE EDITIONS
Google has announced an online bookstore that will compete with Amazon.com.

6 GOOGLE ADS
A sophisticated mobile maps application is being developed for smartphones and will carry geolocated ads.

7 GOOGLE CHROME
Google's web-based OS for netbooks will be an alternative to traditional operating systems when it launches this year.

8 GOOGLE DRIVE
Now just 1GB in Google Docs, this will grow massively and work with the Chrome OS.

9 GOOGLE FIBRE
Google is rolling out a gigabit fibre-optic broadband network to half a million US homes and may do it in other countries.

10 GOOGLE ELECTRICITY
Google has applied to become an electricity wholesaler in the US, in part to protect its datacentres.



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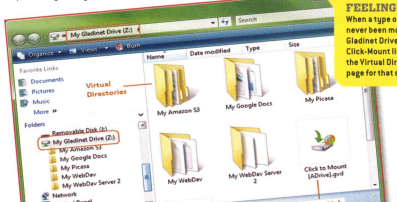
With the right software, your PC could become a powerful home security system, monitoring several areas simultaneously and alerting you at the first sign of any intruders. All you need is a collection of webcams and some know-how. Firstly, install the trial version of Active WebCam (**www.pysoft.com**). It displays a 'Trial version' logo but won't time out, so it's good enough for us. Launch the program, set up a camera and select 'Settings > Motion Detection'. Make sure motion detection is turned on, with the sensitivity you need it to be (turn it down if there's a pet wandering around to reduce the chance of accidental alerts) and tell the program to alert you via email should it detect something. Now click 'File > New Camera' to add each new camera, using the Motion tab to define how it's treated. That's just about it. Test Active WebCam by sending someone into each area and confirming that you're notified, then just leave the program to watch over your home.

THE G DRIVE IS HERE (WELL, SORT OF...)

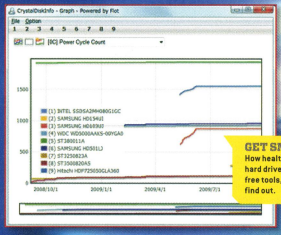
Online storage finally becomes truly accessible with Gladinet.

If you use several free online storage services, you'll love Gladinet, a service that turns several types of web storage into virtual folders on your desktop. Gladinet makes Microsoft's Windows Live SkyDrive finally usable. With 30GB of storage space, Skydrive offers far more online storage than any other free cloud service, but by itself, uses a clumsy upload interface that allows you to load files only one by one. By contrast, Gladinet mounts SkyDrive as a network folder in Windows Explorer and, importantly, lets you do the same with Google Docs. This is timely because Google recently allowed its Google Docs online storage to be used for storing any kind of file, not just documents, creating an early 1GB version of Google's mythical G Drive. Open up the Google Docs virtual folder created by Gladinet in your Windows Explorer and it looks just like a folder on your PC, with the native Google documents inside it able to be opened by desktop office apps like Word or Excel. Gladinet can also mount any FTP storage, and professional online storage such as Amazon S3 and now Microsoft's Azure's Blob storage service.

Download the Gladinet app from **gladinet.com**, install it on your PC, give it your web storage account names and passwords (it stores the passwords on the PC) and watch it create the virtual folders. While it's not a storage/file syncing service like Dropbox, it does provide users with the ability to back up any folders on their desktop to online.



FEELING GLAD?
When a type of storage has never been mounted, the Gladinet Drive exposes a One-Click-Mount link that launches the Virtual Directory mounting page for that storage.



GET SMART
How healthy is your hard drive? With these free tools, now you can find out.

DRIVE TELEMETRY

New application makes full use of SMART drive monitoring to prevent drive failure.

Hard disks are mechanical devices with moving parts. Over time these parts begin to wear out and, as they do, there will be subtle changes in how the drive performs. If your drive's motor is coming to the end of its life then the drive may take longer to spin up, or files may need fractionally more time to load. These changes and drop-offs in performance aren't likely to be perceptible to even the most experienced PC user. Instead, you'll need special monitor and analysis tools to pick up on them. This is where Self-Monitoring, Analysis and Reporting Technology (SMART) comes in. It's a monitoring system for hard disks that's designed to detect and report on various indicators of reliability in the hope of anticipating failures. All modern hard disks have SMART built in, but sadly Windows makes little or no use of it. A third party freeware app, CrystalDiskInfo can help, however: you can download it from **www.bit.ly/6gZeES**. When up and running, you should see a breakdown of key drive statistics. Firstly, there's Health Status — if it moves away from Good, replace your drive. Temperature, Power On Count and Power On Hours are also useful. Manufacturers publish the operational tolerances of their drives, and also Mean Time Before Failure (MTBF) figures. If your drive is approaching its MTBF, consider replacing it. If it's running close to its maximum operating temperature, think about making changes to the airflow inside your PC.

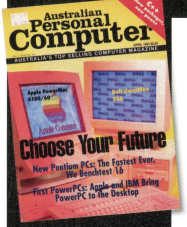
CrystalDiskInfo offers a huge amount of esoteric SMART telemetry. With a little web research you should be able to make sense of it. These figures are amalgamated into the app's basic Health Status reading, so stick with that if you're in a rush. Many hard disk manufacturers also offer disk analysis tools tailored to their own drives. Hitachi (**www.bit.ly/Uzcx0**) has an excellent selection, including disk fitness testers and a SMART analysis tool. Samsung's HUTIL diagnosis and analysis tools can be found at **www.bit.ly/58kztA** and Seagate's SeaTools testers are at **www.bit.ly/8zQoTo**. Finally, if you're a Western Digital user, head to **www.bit.ly/4sGBYm**. From there, you'll need to select your drive and then click 'Data Lifeguard'.



TRACE AN EMAIL AUTOMATICALLY

When you're worried that an email isn't what it claims to be, you should inspect the headers, which give chapter and verse on where it came from. But reading headers is a fiddly business. Luckily, there are web sites that will do it for you. One such service is IP-address.com (*www.ip-adress.com/trace_email*). Save the dodgy email as a text file, then copy and paste from the top to the line that reads 'Content-Type: multipart/mixed'. Enter this into the input box on the site and click 'Trace Email Sender'. You'll know for sure exactly who sent it within seconds.

THE (A)PC REVOLUTION
APR / 1994



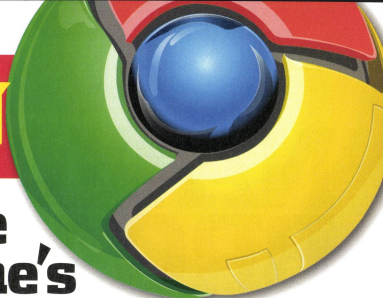
SUPERCALC FOR WINDOWS 1.0

With SuperCalc for Windows, Computer Associates has finally entered the mainstream Windows spreadsheet stakes. This SuperCalc version combines a conventional 2D spreadsheet with the dynamic spreadsheet capability of CA Compete!, which will no longer be sold as a separate product. In recent upgrades, conventional Windows spreadsheets have embraced the data pivoting capabilities popularised by Lotus and CA.

COMPAQ STORMS HOME IN PORTABLES LEADERSHIP

Compaq has announced the release of the new Compaq LTE Elite. The new release is available with a range of processor capability, from the 486-DX2/40MHz processor to a 486DX4/75MHz. The Compaq Elite comes pre-installed with Microsoft DOS 6.2, plug-and-play ready Windows 3.1, Microsoft Video for Windows 1.1 Runtime and Compaq's own Tabworks. Prices start at $6,409, for the Elite 4/40C with a 170MB hard drive and go to $13,006 for the top-of-the-range 4/75C with a massive 510MB hard drive.

TOP EXTENSIONS
Google's Chrome browser is finally extending itself. Here are the ones you want to know about.



Google Chrome's top extensions

Google's Chrome browser finally runs extensions.

Extensions are tiny programs that extend a browser's functionality (and the secret behind the success of Firefox). For those of us addicted to the speed and robustness of the Chrome browser, the good news is that it finally runs extensions. Is this the Chrome OS slowly taking shape in your browser? Here we list *APC*'s favourite Chrome extensions:

1 AD BLOCKERS

We're surprised that for a company whose DNA is based on making money from advertisements, Google allows ad blocker extensions on Chrome. The best ad blocker is Ad Thwart, which lets you define any number of features on a page (not just ads) and block them. You can also block specific ad servers, add to its white list or create custom filters. Ad Block is another similar, highly-rated ad blocker.

2 BOOKMARK SYNC

Although Chrome now has its own native bookmarks syncing for other instances of Chrome browsers, it uses the rubbish Google Bookmarks as the base. Xmarks Bookmark Sync is superior and also syncs with Xmarks on other types of browsers. It's also the most popular bookmark sync extension on Firefox.

3 EMAIL

Autopen rectifies one of the most annoying features of Gmail — the inability to add signatures with fancy fonts or images. Autopen lets you insert signatures automatically or choose from a selection.

4 IMAGE EDITING & SCREENSHOTS

Aviary is a powerful web-based image editor which has just changed from a fee-based model to a free ad-supported one. In Chrome, it's available through the Aviary Screen Capture extension. The Picnik Extension for Chrome is similar. For taking screenshots, though, none are as good as Webpage Screenshot, which captures the entire web page, not just the visible portion.

5 PASSWORD MANAGERS

There is really only one great one, LastPass, a password manager and form filler that captures all your passwords and encrypts and stores them, so they're available wherever you login.

6 SEARCH UTILITIES

Google Quick Scroll is a fantastically useful extension that lets you jump directly to the relevant bits of a search on a web page, without having to scroll down to find highlighted search terms.

7 TRANSLATORS

Several extensions take advantage of Google's translation services. The best is Google Translate, which automatically detects if the language of a page you're on is different from the language you're using for your Chrome interface.

8 UTILITIES

We can't do without Session Manager. When you have heaps of tabs and windows open and want them re-opened when you next fire up Chrome, this extension brings them all back. RSS Subscription Extension (by Google) auto-detects RSS feeds on the page and displays an RSS icon which you click for instant subscription.

9 YOU TUBE

Although Google lists ad-blockers on its Chrome extensions list, it does not show video downloaders, so you have to find them via a Google search! Easy YouTube Video Downloader is a pretty good one, enabling you to download YouTube videos in FLV, MP3, 3GP, MP4, 720p and 1080p FULL-HD formats.

Another essential YouTube extension for Chrome is Stop YouTube autoplay, which stops the annoying autoplaying of YouTube videos when you open them in new tabs, but allows pre-buffering. And if you want to watch all YouTube videos at their maximum resolution, YouTube Auto HD saves you having to select the HD options for each video when these are available.

This list is available at **apcmag.com/chrome**, with direct links to the extensions for easy adding to your browser.

NATIONAL BROADBAND NETWORK

We want our instant high-def movies, apps and video phones now! **David Braue** finds out where the $43 billion National Broadband Network is at.

With more than 10 million premises to connect during its eight-year construction phase, the 100Mbit/s national broadband network has to roll out to 4,000 homes *every day* — including weekends and public holidays.

That's a frenzied pace that will require an army of trained and certified installers, and no small amount of help from homeowners and business owners.

But if this appears to be another home insulation debacle in the making, rest assured that a year after it was announced, the national broadband network is making progress. Construction began in September 2009 in Tasmania and February 2010 in Mt Isa, Queensland — one of numerous waypoints in the $250m Regional Backbone Blackspots Program (RBBP) that will lay over 6,000km of fibre through underserved regional centres.

Other centres will progressively come online as the fibre wends its way across the country, and simultaneous local builds will eventually see fibre-optic cabling run nearly every street in Australia.

That's not to say that the government company building the network, NBN Co., is having a smooth ride. It has to deal with incompatibilities with fibre-optic systems being installed in many new housing estates, and difficulties running fibre-optic cable into apartment blocks where rights of way are complicated (one solution to the latter problem is to run fibre to the kerb, then deliver end-user connections via VDSL).

WHAT WE'LL GET

The NBN will run fibre-optic cabling capable of carrying gigabits of data per second over distances of 15km to 20km. Fibre-optic networks have been used for decades but have traditionally been too expensive to roll out on a mass scale; however, recent developments such as PON (Passive Optical Networking) enable a shared architecture that will, in the NBN's case, service 32 homes off a single fibre-optic trunk. There are numerous types of PON on the market, but NBN Co. is leaning towards G-PON.

The fibre-optic cable will run into your property and end up connected to an Optical Network Terminal (ONT), a box that will be attached to the side of your house. The ONT will bring in fibre-optic cable (and, possibly, a connection for the legacy PSTN) and provide a standard Ethernet port into which a wireless router or in-home LAN can be plugged. NBN Co. is still deciding whether the rollout will mandate the installation of an ONT on every house, or whether the fibre will run past the kerb and an ONT only installed when customers sign up.

WHAT WE'LL PAY

The price of NBN services has been an incredibly contentious issue ever since the project was announced. Numerous analyses have tried to amortise the $43 billion price tag across the number of premises, made some educated guesses about the likely take up of NBN services, thrown in a few other constants for good measure, and come up with likely end-user pricing of anywhere between $50 and $250 per month. NBN Co. has promised some indicative wholesale product pricing before the new financial year is too old. That pricing will be essential, since it will give ISPs a better idea of how much margin they can add onto the wholesale services.

Although the NBN will have a much broader reach than existing cable internet services from Telstra and Optus, their pricing for 100Mbit/s services — which Telstra launched in Melbourne in December priced from $169 per month, and which Optus will deliver to east-coast capitals before year's end — may set the low-water mark for NBN-fuelled retail pricing. Cross-subsidies could lower the price, and carriers could of course offer slower services or generous quotas at lower prices that would convince customers to abandon their existing ADSL services.



THE STRATEGY

In announcing the new strategy for the NBN, Prime Minister Kevin Rudd and Communications Minister Senator Stephen Conroy conceded one critical point: fibre networks become prohibitively expensive for the most isolated properties. For this reason, the government lowered its coverage target from 98 percent to 90 percent of Australians, and has committed to servicing "the other 10 percent" with a combination of long-distance wireless technologies — WiMAX, for one — and satellite internet services that can reach anywhere in Australia but tend to have slower speeds and higher latency than fixed connections.

THE PITFALLS

The run up to this year's Federal election is likely to make the NBN a target for political pot shots. The NBN infrastructure has been repeatedly slammed for its high cost and difficult timeframe. Senator Conroy has also copped criticism: in October, for example, he was left red-faced after highly sensitive Telstra network information was tabled in the Senate. More recently, the appointment of several employees of McKinsey & Co., the consulting firm hired as lead NBN advisor in August 2009, raised eyebrows. In January, the Australian National Audit Office's enquiry into the original NBN process, found Conroy ignored warning signs the $30m tender process was failing. And in February, Conroy was found to have personally recommended a Labor ex-politician to a unadvertised $450,000 position with NBN Co.

THE BUILDER

Charged with building and delivering the national fibre network, NBN Co. will be a wholesaler, undertaking commercial relationships with ISPs and handling the massive task of managing the network on a 24x7 basis. The important thing to understand about the NBN is that end-user customers will have no direct relationship with the company.

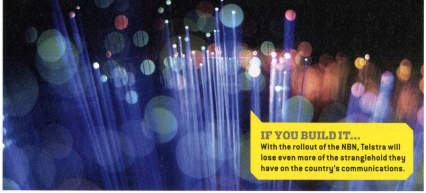
In many places, particularly rural and country areas, it will be the first time ISPs have been able to source reliable wholesale services from anybody but Telstra. This is expected to result in faster and cheaper internet services for consumers, as competition heats up and ISPs no longer face the Hobson's choice of paying high Telstra wholesale prices or building their own infrastructure. The network is expected to subsume much of Telstra's existing landline customer base, eventually making the current copper network obsolete.

At press time, NBN Co. was envisioning delivering just three wholesale products:

ELAS (Ethernet Line Access Service) will link customers' homes and businesses with their local POI (Point of Interconnection), a jump-on point to the NBN's network comparable to the exchange on Telstra's PSTN. ELAS is a Layer 2 service that will carry any kind of Layer 3 data protocol customers want to run over it.

ELBS (Ethernet Line Backhaul Service) will link the customer's POI with a distant POI that connects to the ISP's own network, carrying traffic over tens or hundreds of kilometres of fibre-optic backbone.

EMCS (Ethernet MultiCast Service) will carry content — for example, videos broadcast over IPTV channels — to large numbers of customers at once without congesting the network; this service requires special handling by the switches that make up NBN Co's network.



IF YOU BUILD IT...
With the rollout of the NBN, Telstra will lose even more of the stranglehold they have on the country's communications.



TIME TO SHARE
Telstra has the power to make the rollout of the NBN a much quicker and cheaper event — but will they?

AND TELSTRA?

Rolling out the NBN will require some sort of pact with Telstra, which owns a nationwide network of underground conduits — access to which would make the NBN much cheaper and easier to roll out. New Telstra CEO David Thodey has proven more receptive to government overtures than his bellicose predecessor Sol Trujillo but — despite recent Telstra concessions that effectively put the sale of its local-loop network on the agenda — months of negotiations have produced little more than the predictable political waffle. Project-managing such an extensive network involves strict scheduling controls, fostering union relationships, and the ever-present likelihood of all sorts of problems. The upcoming election will put political pressure on the project and, in the event of a Coalition win, could potentially see changes in scope and direction — although the Opposition have not yet spruiked any NBN alternatives and may, given NBN Co.'s momentum, end up having to throw in the towel.

epinions

HAVE YOUR SAY

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Come on, have your say! We want to hear what you think. Add to these discussions or email your views (in fewer than 250 words) to epinions@acpmagazines.com.au. All correspondence becomes the property of *APC* and is subject to editing. Letters must include writer's full name, street address, suburb, state and phone number to be considered for print publication and to be in the running for Letter of the Month prizes. Address and phone details will not be published.

THIS ISSUE'S WINNER

Letter of the month

Scott wins a TP-Link Wireless N Router and Adapter bundle worth over $200.



FREE TRAINING

I liked the section about Best (mostly free) Apps in the February 2010 issue. If you want to take that a step further, did you know about Best (free) Training? Two notable web sites are Microsoft My Learning (**tinyurl.com/ygkofk**) and Channel 9 (**tinyurl.com/yhlvmq2**).

I've completed most of the free My Learning content and a number of the paid ones as part of my memberships and subscriptions.

The most recent memorable course was on how to use the Ribbon Interface in Office 2007. Why do a course on the ribbon? Because once they have explained where, how and why the ribbon is the way it is, one can be 95% more productive with it, plus you get to print a nice certificate for your effort.

The Channel 9 site has basic "here is a 'product' feature you will like" material and university level programming content and MIT Open Courseware (**tinyurl.com/2t2rfj**) is also good, even if you don't get all the lecture notes in most subjects.

The bottom line is that any way that helps educate users (and us who help users) for free must be worth something to spread the news about.

Scott Anderson
Strathpine, Qld

Our CAPTCHA letter of last month generated so many 'gotcha' responses we just had to print a selection.

WHAT OS?

We get your mag at work and it's refreshing to pull way from online sources and read a hard copy mag.

I must comment on Jenneth Orantia's article on 'Which OS'? While I understand that Jenneth probably focused on the most popular OSs currently in the market, it's a little strange to have completely missed what Nokia are trying to do with their OSs.

Nokia's (soon-to-be-released in Australia) N900 is a smartphone that runs on the Linux Maemo 5 system. Nokia has been using the Maemo OS since 2005 on its tablets (**tinyurl.com/knjptu**).

With the S60 platform ageing and the push towards a richer multimedia experience, Nokia will shift its high-end N series phones towards this OS. It was surprising that Jenneth didn't mention this OS! Did it not come up during research?

Shawn Low
Melbourne, Vic

RUN ANYTHING

I bought the UPCTools software way back in 1994 to create EAN/ISBN barcodes, and just succeeded in installing it in Windows 7. That is the fifth operating system it has worked under.

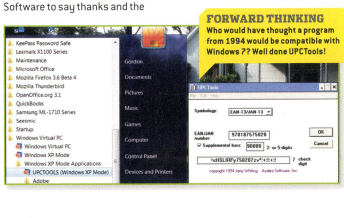
Of course, because my version of Win 7 is 64-bit, I had to install it in XP mode but it starts directly from the start menu, or from an icon on the task bar.

I wrote to its makers, Azalea Software to say thanks and the owner replied to say that it warmed his heart to hear it.

The clue to getting it listed in Windows 7 is that you need a shortcut in the "All users" section of the XP start menu folder. The attached screenshot proves that a 1994 program can work in Windows 7 — if it was written well in the first place.

Gordon Woolf
Hastings, Vic

FORWARD THINKING
Who would have thought a program from 1994 would be compatible with Windows 7? Well done UPCTools!



YOU'RE GROUNDED

We don't suggest grounding your arrestors to your guttering, unless you want live down pipes that is!



CABLE LOSS

I have to question David Neiger's engineering qualifications (Linking two homes over Wi-Fi) as they do appear to be sadly lacking. He was obviously impressed with the size of the "very much over-engineered" antenna cables being run. Has David never heard of cable loss? The larger/thicker the cable the lower the loss (generally) and hence the more signal to the antenna and at the receiver end. The photograph of the installed antenna shows what looks like a lightning arrestor. Arrestors need to be connected to a good ground, independent of the house electrical system. Only an idiot would suggest connecting it to the guttering! Has David never heard of plastic guttering? What about safety? Lightning does funny things, David, and downpipes are within human contact. Join Peter Garrett's shonkey foil installers!

Keith Aggett
Faulconbridge, NSW

CAPTCHA EXPLAINED

As a lecturer of mathematics for over 33 years, I cannot let the comment by Peter Torning in the March 2010 issue of *APC* pass without comment. He is not alone in his misunderstanding. BODMAS is a handy mnemonic for remembering the rules of arithmetic, but it is simply a guide when you already know the rules. In its simplest form it simply says that Brackets take precedence Over (Division and Multiplication) which take precedence over (Addition and Subtraction). So 3-1+5 does yield 7 as addition and subtraction have the same precedence and are performed in left to right order. However 3-1x2 will give answer 1, as multiplication has higher precedence over subtraction. Any calculator with algebraic precedence will give these answers.

Rod
Canberra, ACT

DANGEROUS MISCONCEPTION

If the writer were paying attention in that early high school maths lesson, he would have learnt that addition and subtraction have equal precedence and should be calculated left to right unless parenthesis dictate otherwise. Likewise with multiplication and division. I shudder to think of the educated professionals out there with the same misconception — structural engineers, surveyors, programmers, bank managers…

Steve Marshall
Giralang, ACT

CAPTCHA LESSON

Perhaps the message we can take from the CAPTCHA item is that mathematical equation CAPTCHAs, have a much likelier potential to be misunderstood than the traditional alpha-numeric ones.

Stephen Chester
Camberwell, Vic

Editor's note: This issue attracted more feedback than any letter published in Epinions in recent years. It's made us appreciate that when it comes to mathematical equations published in APC, it's important that we get them right. To be fair, the writer, Peter Torning, did contact us shortly afterwards to rectify his mistake, but by then the magazine was already rolling off the presses. The good thing about the responses (even the ones that accused us of being full of "brown smelly stuff") is that we now have a list of several mathematicians we can call on!

TASTY CLICHE

In your March issue, on page 47, the writer says: "The power load of these chips must be taken with a grain of salt."

Now I'm hungry.

Casey Bennetto
Abbotsford, Vic

apc

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enduser

FROM THE READERS OF APC



apcenduser@acpmagazines.com.au

Do you work in the IT industry and are forced to deal with inept and clueless end users on a daily basis? If you have an interesting or amusing story, email us at apcenduser@acpmagazines.com.au. All correspondence becomes the property of *APC* and is subject to editing. Letters must include writer's full name, street address, suburb, state and phone number to be considered for print publication and to be in the running for prizes. Address and phone details will not be published.

Accidentally showing

Robert Mehta, a computer salesman, was at a business meeting recently when he saw a colleague accidentally display his video surfing trail on his notebook during a presentation. "Like the Macquarie Bank guy, there was nothing particularly nasty on there, but it was on the projector and people snickered," says Mehta. "It made me wonder why software companies treat us like dumb users by including reminders of file history and web sites surfed at every turn. Case in point is the new Windows 7 Start Menu. Application icons now display recent files opened. Is that really necessary?" We see Robert's point, but we're not sure we agree because history trails enhance usability. Mehta's friend performed what's known in the industry as an "accidental showing", but he got off lightly compared to a priest in Pennsylvania just two months before, who was using his computer to show parishioners an informational DVD about the annual diocesan fundraiser. Unfortunately, the priest clicked the wrong button and the media player switched to a set of digital photos, which church officials later said consisted of "minimally attired adult males." The priest was relieved of his duties.

THE PROBLEM WITH DVD DRIVES



IT manager Brian Hand was recently called to help a staff member who was frantically trying to copy data from a CD to meet a deadline. The staff member told him matter-of-factly that the DVD drive on her new Dell PC was faulty and refusing to read her CD. Trying to assist him with her own analysis of the problem, she told him the disc worked in another PC and that Hand had to fix or replace her PC immediately as she could not work with faulty equipment.

Thinking he was dealing with someone who knew her way around computers, Hand was amazed when he got to her workstation and realised what the problem was. Hand says: "Her PC has a desktop case and when she had tidied her desk she had stood the PC on its side. When finished, she returned it to its usual place but upside down. She then tried to put the CD on the bottom of the drawer, so it was being ejected as the drawer closed." Hand nonchalantly flipped the case over and magically fixed the problem.

NOKIA CABLES

Joshua Riesenweber works for an IT company and manages several clients. He recently got a call from one who complained that her email wasn't working. Riesenweber took her through the usual diagnostic steps to find the fault, but all he could determine was that she didn't have access to the internet nor to a mapped server drive. "I got her to check that the network cable was plugged in, but she said there was no activity light. I got her to trace the cable back the small switch at the desk. She said it was plugged in but there were no lights." After running her fruitlessly through more tests, he figured something must have happened to the switch and it would need replacing. He headed out on site to have a look. "When I got there, everything was as she said, so I went to change over the switch. As I unplugged the switch, the label on the power adapter caught my eye: it said Nokia! Someone had unplugged the switch to charge their mobile, then got the adapters mixed up. I looked around and sure enough, the adapter was on the desk, and it all worked when I swapped it out."

WINNERS GET THIS

Whether you are a digital photography nut, into designing avatars or need a more intuitive way to mark up documents, the Bamboo Fun tablet from Wacom is for you. It uses a pressure-sensitive pen to navigate, draw, write, retouch, and paint. Adobe Photoshop Elements and Corel Painter Essentials come bundled for beginners, while confident users will find the Bamboo Fun unlocks the advanced pressure-sensitive features in their favourite applications. RRP: $299 (Bamboo Fun Medium). Available from **www.wacom.com.au**.
This month's winner is Brian Hand.



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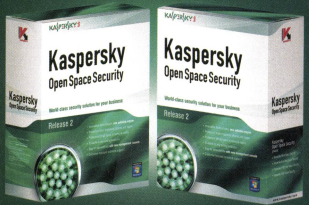
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The waiting game

Watchdog tries to assist a reader when his online goods never turn up, but finding 'Mr Gadget' proves to be easier said than done. . .



The single biggest complaint now being received by Watchdog is from people who have ordered goods online and then have to wait months for delivery, if they get them at all. It seems all too easy to set up an online store and not deliver goods on time once the customer's have paid for them.

Typical is the experience of Jonathan O'Brien, of Melrose Park, NSW, who bought three items from online site **mrgadget.com.au**: an SDHC card, RC helicopter and USB vacuum. O'Brien says he was led to believe the first two were in stock and the last on back order.

The first thing to arrive was the helicopter. "It arrived broken, and broken in such a way that it was broken before it was even boxed. It would have been impossible to break the internals in such a way inside the packaging."

The SD card, O'Brien was told, was not in stock and on back order. "I needed the SD card for Christmas, and with over month to go I did not worry that it was on back order. However after two weeks I started to get worried so I rang them to cancel the back order and advised them that I had bought one elsewhere. But they did not answer so I left a detailed voicemail including my order number, the reason, and my contact details, and also advised them at the same time the helicopter was broken and asked for an RA (Return Authorisation number).

"Early January, two months after my original order of in-stock items, they sent me the SD card, having ignored all phone calls and emails. So on 7/1/10 I emailed them again asking for an RA on my broken helicopter and an RA on the useless SD card that I cancelled after being told the in-stock item became a back-order. I have heard nothing back. Note — at this point I still have not received the USB vacuum either."

O'Brien then went to the NSW Office of Fair Trading. The department advised him that, after four weeks of trying, "Fair Trading has made numerous attempts to contact the trader via telephone and written correspondence but has been unsuccessful in obtaining a response. Therefore mediation of your complaint has not been possible."

O'Brien was advised to apply to the NSW Consumer, Trader & Tenancy Tribunal (CTTT) to have the matter resolved at a hearing of the tribunal. O'Brien wants other *APC* readers to be aware that if a consumer advocacy government organisation is unable to contact a vendor, the only way to force a resolution is to go through a court or tribunal with legally enforced orders. "Please let all the readers be warned that if they have no way of contacting Mr Gadget in the event of any issue, and that Mr Gadget ignores even the Office of Fair Trading's communications, any dealings with them requires a subpoena through the courts."

APC joined in the efforts to secure a reponse from Mr Gadget. We tried to contact the owner of the Mr Gadget site, who according to domain records is Mr Arnold Arvanez of Melbourne. Emails to the contact email on the site went unanswered, so we tried to locate Mr Arvanez by other means.

We found that Mr Arvanez is actually a heavy user of social networking media, which should have made it easy enough to contact him. On his Arnold Arvanez blog, where he lists the Mr Gadget site as one of his interests, he provides ways to contact him via Twitter, Friendfeed, LinkedIn, Plurk, StumbleUpon and Digg. We tried some of these too, but as we went to press, we had still not received any reply. ETTE

Contact Me

You can catch me via email on **me@arnoldaranez.com.**

Due to the thousands of emails I receive on a daily basis (mostly spam), I may not answer your mail right away, but will endeavour to reply as soon as possible.

As mentioned on my About page, you can connect with me via:

Plurk | Twitter | Friendfeed | StumbleUpon | Digg | LinkedIn

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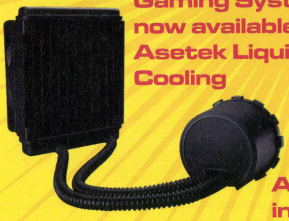


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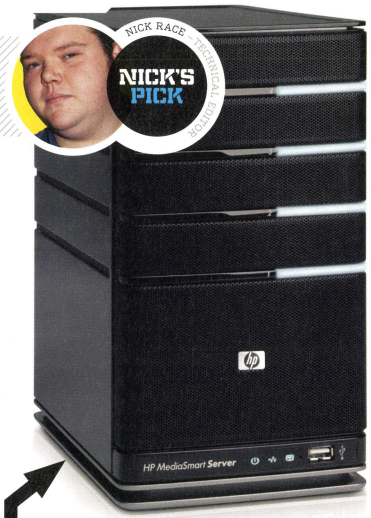
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HP MEDIA SERVER LX197

HP's Media Servers have been the benchmark by which all servers have been measured. This Server is more device than disk bay, but a great start for those with modest media needs.

PERFORMANCE ✪✪✪

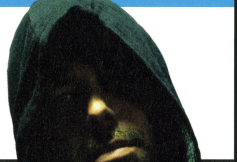
The biggest let down is the lack of expandable storage. The higher model adds in drive bays, but this one only allows more gigs with USB external disk drives.

PRICE ✪✪✪✪

At $499 it's not cheap. You can build your own for less, but you'll miss out on the space saving design and top notch additions that HP have worked in.

SETUP ✪✪✪✪

It has 1TB of hard disk space and a low power, low noise Atom processor, but the killer app is the customisations HP have done to the basic WHS software.



LABS FEATURE

DOWNLOAD SECRETS!

The internet is full of videos. You just need the right knowledge, tools and addresses to find it.

40

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7/10

Enspire Vitesse GXi5

You could say our first impressions were good.

Enspire Digital
www.enspiredigital.com.au
$1,999

Fast; quiet; USB 3.0.

Not fast enough.

SPECIAL FEATURES
GA-P55A-UD3 motherboard
4GB of RAM
Core i7 860 CPU
USB 3.0

Our dealings with Enspire have shown the company to be one of the most adept performance PC makers in Australia. It knows how to squeeze high performance out of stock hardware while keeping everything stable enough to be sold commercially. It also has a habit of being very neat, and the insides of the Vitesse show that care and attention have been used in its construction, with the cables hidden as much as possible.

The system has a strong Gigabyte orientation with a variant of the GA-P55A-UD3 motherboard. This supports USB 3.0, which will significantly speed up file transfers once companies have invented devices to work with it. Seated in this is 4GB of RAM, a Core i7 860 CPU and a 1GB WD Caviar Black hard disk. A Gigabyte Odin 800W PSU powers everything.

The 860 pretty much replaced the popular Core i7 920 (at least in terms of price point). It's a quad-core part with HyperThreading and is stock clocked at 2.8GHz. When some cores aren't required it shuts them down and boosts the frequency of those remaining up to 3.46GHz without sacrificing stability. However, Enspire has permanently overclocked the 860 to 3.67GHz. History tells us that this should be stable and the large heatsink fan gives us confidence that it will be.

But it's all about performance and the Vitesse scored a decent 9,549 in PCMark Vantage. That's virtually identical to TI Computers' EP 5870, which uses a lesser Core i5 750 chip at stock speeds. They're both very fast scores but how they get there is different. The TI uses a 10,000rpm VelociRaptor hard disk to boost its score. The Vitesse has a less-fast but more capacious hard disk. It will also be faster in apps that are tailored for HyperThreading, as this is absent on the 750. This said, there's still potential to overclock TI's machine.

Both systems use AMD's Radeon HD 5870 graphics card. Once again the benchmark scores were similar with the Vitesse coming in at 17,065 — less than 200 points behind TI's system. It will happily play all games on the market at high detail settings.

It doesn't come with any peripherals but most buyers of such a tweaked PC will either have their own or choose them at time of purchase. The Antec Three Hundred case looks strong and monolithic. It's not the glitziest case in the world, mind.

Connectivity is excellent thanks to the USB 3.0 — but only two ports on the back are compatible. The other eight USB ports are USB 2.0 and they're joined by Gigabit LAN, a PS/2 port plus optical and coaxial S/PDIF out ports. The graphics card has two DVI ports, HDMI and DisplayPort. At the front are the standard two USB ports and audio jacks. A DVD writer keeps them company.

If you want to upgrade there's space for five more hard disks and two more 5.25in drives. On the motherboard there are three spare PCI slots, a PCI 1x slot and room for another graphics card. The CPU's fan overhangs the memory slots, so adding extra RAM might be a problem.

Windows 7 64-bit rounds everything off and leaves this as a well-rounded, performance PC. However, for $350 more you get a similarly-speedy machine from TI with an excellent monitor plus keyboard and mouse. It's close, but we couldn't help be a bit disappointed by the Vitesse's speed. Being pipped by a value system simply isn't quite good enough this month.

Nick Ross

7/10

HP LX197

Bringing the server out of the lab and into the living room.

HP
www.hp.com @
$499 $

Easy to use; great file support. ✔

Expensive compared to the US version; can't upgrade storage. ✖

SPECIAL FEATURES i
Intel Atom 1.6GHz CPU
1GB DDR2 memory
1TB hard drive space (SATA 5,400rpm)

Media servers have typically been the domain of hardcore geeks and uber nerds. HP wants to change all this, understanding that today's families have hundreds of gigabytes of music, movies and photos, all needing to be shared across the family's PCs and notebooks. The LX197 is HP's attempt at making media servers less about Computer Science degrees, and more about affordability and usability for the average human being.

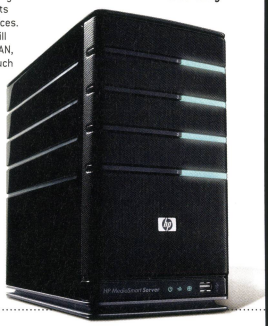
Which makes the lack of setup documentation a very strange oversight. While we knew to disable our firewall before looking at our Network Devices to discover the LX197 residing on our network, most mums and dads wouldn't have the fuzziest. And while the Home Server Connector Troubleshooter held our hands through the process, most oldies would prefer a piece of paper beside them as well.

Once it's set up, the LX197 is an impressive piece of kit. Using an Intel Atom processor, it's quieter than a sneaky teen starting their Torrent downloads after midnight. A Terabyte of hard drive space will last a few months depending on your affinity to Pirate Bay, while four USB ports allow easy transfers to USB devices. A Gigabit Ethernet connection will make the most of your Gigabit LAN, if you're lucky enough to have such a speedy network.

It supports a wide range of file types, and it'll automatically search your networked computers for media files. Unfortunately, the control over this function is quite limited, with no option to set this for a specific time of the day. It'll work as an iTunes server, and can also feed you your media fix wherever there's a net connection, thanks to remote access.

If you're part of a household where sharing media files requires frequent use of the sneaker net or laborious file transfers, the LX197 offers a well-rounded, affordable option.

Bennett Ring



6/10

HP MS210 All-in-One PC

Another iMac-alike contender enters the ring.

HP
www.hp.com @
$1,199 $

Cheap for an All-in-One; decent specs. ✔

Trounced by the iMac in all regards. ✖

SPECIAL FEATURES i
Windows 7 Premium
AMD Athlon 64 X2 3250e (1.5GHz)
2GB DDR2

If you're never going to upgrade, and live in a Sydney shoebox worth $10,000 per square meter, an All-in-One PC can be an attractive computing option. Apple has this market well and truly stitched up with the sexiest slab of aluminium on the desk top, the iMac. For HP's All-in-One MS210 to succeed, it needs to offer better hardware, at a cheaper price, in a sexier case than the iMac. That's not just an up-hill battle, it's more like an up-cliff struggle.

While the MS210 isn't ugly by any stretch of the imagination, it's not even close to the supermodel good looks of the iMac. The monitor is a few inches smaller, at 18.5in versus the iMac's 21.5in display. It's not just a poorer display due to the size either — the iMac has much better colour reproduction and contrast.

Inside, the iMac's speedy 3.06GHz Core 2 Duo runs rings around the MS210's AMD Athlon 64X2, which ticks by at half the speed, a mere 1.5GHz. It's not even a close race. It's the same in the field of memory, with the iMac packing a whopping 4GB while the MS210 struggles on half the amount. The sad story continues with hard drive space — while the cheapest iMac includes 500GB, HP's is maxed out at 320GB. Admittedly it's a decent 7,200rpm drive, but size is king.

The MS210 is starting to look decidedly like an All-in-None. It uses the ATI Radeon HD 3200 integrated chipset, versus NVIDIA's GeForce 9400M integrated graphics. Game, set and match to the iMac. The MS210's mediocre specs resulted in a rather limp result of 2,839 in PC Mark Vantage.

The final nail in the MS210's coffin is its price — it needs to be massively cheaper than an iMac to be worth a look. At $1,199 it's not too expensive, but it's only $400 less than the base iMac, which starts at $1,599. Considering it's less than half the PC of the iMac, that price difference just isn't big enough.

Bennett Ring



9/10

TI Deluxe 540

Is this finally Nehalem for the masses?

Trinity International
www.ticomputers.com.au
$1,380

Powerful; great value; looks good with decent peripherals; quiet.

None.

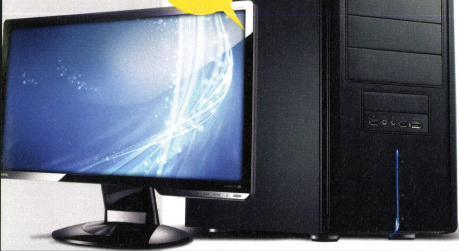
SPECIAL FEATURES
3.06GHz Core i3 540
4GB of DDR3 RAM
Gigabyte GA H55M-UD2H

APC MAGAZINE — EDITOR'S CHOICE

Intel's Nehalem processors truly kick butt. But because their only opposition comes from Intel's own Core 2 line, there hasn't ever been a reason for the company to lower its pricing. However, we finally have some affordable parts in the shape of Core i3 and the new H55 platform.

Trinity International built the Deluxe 540 especially for us and it's done a great job. The Cooler Master Sileo 500 case looks classy and is whisper quiet, thanks in part to soundproof cladding on the inside surfaces. The 22in BenQ G2220 LCD is bright and vibrant and even the lower-end Logitech mouse and keyboard look and feel good.

Everything is based around a 3.06GHz Core i3 540 CPU. This 32nm dual-core part brings with it some new instructions and some minor architecture changes. Some are retrograde steps; like the removal of the memory controller from the CPU and the lack of Turbo Boost. However, HyperThreading is still there and integrated graphics are plonked next to the CPU for extra efficiency. The upshot is that Intel is finally competing in the sub-$200 desktop processor market again.



Pretty much the best 'value PC' we've ever seen.

Flanked by a 1TB Seagate hard disk and 4GB of DDR3 RAM, it scored 8,020 in PCMark Vantage, which is very respectable. This system will easily handle anything you throw at it and only hardcore encoders will be left twiddling their thumbs.

The new architecture brings with it a new motherboard chipset and TI uses Gigabyte's GA H55M-UD2H. This naturally has integrated graphics but TI adds a GTX 260 graphics card to allow decent game play. A score of 13,790 shows it will play all the latest games, albeit not all at the highest detail settings.

It's a winner for connectivity too. The graphics card supports HDMI and VGA. These connectors are mirrored on the motherboard's backplane, which isn't much use, however Display Port is also there should you need it. Also at the back of the system there is FireWire, eSATA, six USB ports, optical S/PDIF out and six audio jacks. Just note that this particular variant doesn't support the new, speedy USB 3.0. At the front of the case are the standard two USB ports, two audio jacks and eSATA.

There's plenty of room for upgrades with another graphics card slot plus two free memory slots available. The only other slot is regular PCI. You can easily add three more hard disks and there are four more 5.25 drive bays.

Windows 7 is included and TI will give you the option of both 32-bit and 64-bit varieties. In this day and age, 64-bit is the way to go — it's up and running now and is the only way to address more than 4GB of RAM in your system. Rounding things off is TI's 1-year parts and 5-year labour warranty.

At $1,380 this is pretty much the best 'value PC' we've yet seen. You can spend thousands more on a Core i7 monster system but the law of diminishing returns kicks in. It's a great poster child for Core i3, and few people won't love the Deluxe 540.

Nick Ross

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PH: 07 3387 1500 - ADDRESS: 3353 PACIFIC HWY, SPRINGWOOD, QLD, 4127

7/10

ASUS K52Jr

Designed for both work and play, can this master either?

ASUS
www.asus.com.au
$1,099

Excellent CPU, GPU and memory.

Case and screen feel a little flimsy.

SPECIAL FEATURES
Intel i3 350M
4GB DDR3 memory
500GB hard drive

Powering up this affordable desktop replacement, we were soon greeted by a whopping fifteen or so proprietary apps installed to the desktop. Whether it's the Lifeframe photo editing program or the ControlDeck control panel replacement, there's far too much preinstalled guff. ASUS needs to realise Windows does most of the same features (and better).

Wipe the hard drive though and we're left with quite a respectable performer. The new Core i3 350M processor delivers very responsive performance, with a clock speed of 2.27GHz. It's fantastic to see a very healthy 4GB of DDR3 included, giving Windows 7 plenty of room to stretch its wings. Even the GPU is better than expected; the ATI Mobility Radeon HD 5470 has enough grunt to run World of Warcraft at middling settings and will handle most of last year's titles with equally conservative options. Our review sample had 500GB of storage, providing plenty of room for all but the most obsessive file hoarder. These specs all combined to deliver an excellent PC Mark Vantage result of 5,148.

Unfortunately the excellent hardware within isn't mirrored by an equally high-quality exterior. To put it bluntly, this feels like a thousand dollar notebook. It's overly plastic, with both the screen and keyboard exhibiting large amounts of flex. The screen is a large slab 15.6in diagonally across, but it's a pitifully low resolution, at just 1,366 x 768. This results in a rather grainy image.

And yet, despite the slightly flimsy exterior, this makes for a decent desktop replacement for those on a budget. If you're not taking it for a bush bash, the keyboard and case should hold up fine to the rigours of domestic life. And you'll be hard pressed to find a notebook with equal specs at this price.

Bennett Ring



9/10

HP Mini 210

While prices of netbooks plummet, quality continues to soar.

HP
www.hp.com
$449

Large keyboard; very light; excellent battery life.

The cheapest version has minimal storage space.

SPECIAL FEATURES
Intel Atom N450 CPU
1GB DDR2 Memory
10.1in WSVGA LED screen

APC MAGAZINE APC EDITOR'S CHOICE

Starting at $449, the Mini 210 is one of HP's most affordable ranges of netbooks to hit Australia. Don't let the price fool you though — it's not built from balsa wood, or powered by a well-trained mouse in a treadmill. When you first unpack this netbook, it's hard to believe it's priced squarely at the budget end of the netbook bracket.

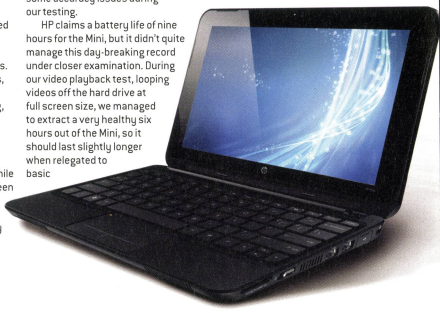
Windows 7 is surprisingly included at this price. Sure, it's the Starter version, which looks more like Vista than Windows 7, but it's still Windows. Not that you need ever see Windows, as the included QuickWeb software offers quick access to web browsing, Skype, email and basic media functionality, just a few seconds after powering up.

A standard Intel Atom N450 (1.66GHz) CPU does the thinking, while a 10.1in display offers plenty of screen real estate. Most impressive though is the so-called "island-style" keyboard, which is apparently 93% of the size of a full QWERTY keyboard. Sitting next to my Microsoft comfort curve keyboard it's more like 60% of the size, but there's no denying that this is one of the better netbook keyboards around. Unfortunately the touch pad isn't quite as wonderful, with some accuracy issues during our testing.

HP claims a battery life of nine hours for the Mini, but it didn't quite manage this day-breaking record under closer examination. During our video playback test, looping videos off the hard drive at full screen size, we managed to extract a very healthy six hours out of the Mini, so it should last slightly longer when relegated to basic net surfing duties.

It might be priced towards the rock bottom of the market, but HP has endowed this netbook with high-end features. The Mini 210 redefines the affordable netbook experience.

Bennett Ring



7/10

Sapphire HD 5450 512MB GDDR3

Multiple monitors at a low price.

Sapphire
www.sapphiretech.com
$79

Cheap; Eyefinity support. ✔

Only 2 digital connections; no gaming performance. ✖

SPECIAL FEATURES
Eyefinity support

Lately we've seen ATI release a new HD 5000 series product every few weeks, beginning with the high-end HD 5800 series, right down to the latest two; the HD 5400 and HD 5500.

The HD 5400 series are entry-level options for people who want a discrete graphics card that outperforms integrated graphics. The series allows multi-monitor support with Eyefinity on a budget.

Sapphire — like the reference model — has opted for a passive cooler and low profile design. Included in the package is two LP brackets: one for the card and the other for the VGA port to attach to if you choose to keep it. The inclusion of VGA means that if you want to run Eyefinity one monitor is going to be analogue.

If you are using three monitors you will notice the VGA attached screen doesn't have the sharpness of the two using the digital connection. While this won't be an issue for many it's worth noting. For many office environments this wouldn't be an issue, but if colours are important or all three monitors are text heavy, something in the HD 5600 series, while still being cheap, would be a better option.

Performance in games just doesn't exist. Outside of killing a few hours on Facebook games or playing Solitaire you're not going to get an experience that resembles anything close to good. The HD 5450 shines in its place in the market, with low profile and Eyefinity support. The inclusion of an analogue connection though is disappointing, although we understand it's due to the limitation that a low profile card brings.

Shane Baxtor



On a budget? The HD 5450 could be just what you need.

9/10

MSI HD 5770 HAWK

MSI enable Afterburners on HD 5770 HAWK.

MSI
www.msicomputer.com
$249

Afterburner; TwinFrozrII cooler; OC ability. ✔

Very DIY to get most out of the card. ✖

SPECIAL FEATURES
Afterburner software
TwinFrozrII



Last year MSI launched its Afterburner overclocking software. While not uncommon for a company to have its own, MSI stood out from the pack by giving us the ability to not only adjust clock speeds but also the core voltage.

Adding extra volts to the core will increase temperatures, so to combat this the HAWK carries with it the Twin Frozrll cooler, which we've seen on higher-end MSI models in the past.

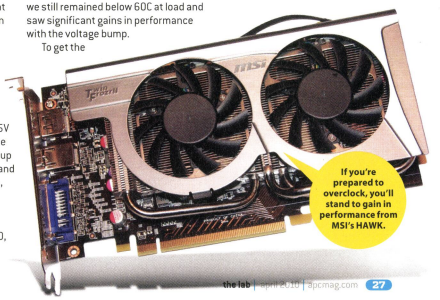
In the gaming department you'll see a small jump in out-of-the-box performance thanks to an extra 25MHz on the core. With the Afterburner software installed and the core voltage bumped to 1.35V you'll quickly find yourself with some serious headroom. With the voltage up we achieved 1,045MHz on the core and 5,552MHz QDR on the 1GB of GDDR5, which is significantly up from the reference 850MHz/4800MHz QDR.

In Vantage we scored P12,835, which is up from a standard HD 5770, which gets P10,425. We also saw good gains in real-world environments with 20% increases not being uncommon in games like FarCry 2.

Due to the extra voltage we pumped through the card the core ran around 8C hotter than a standard HD 5770. But we still remained below 60C at load and saw significant gains in performance with the voltage bump.

To get the most out of the model you need to be confident enough to overclock. If that's something that interests you this is a great little model, and using Afterburner is not only fun but extremely rewarding.

Shane Baxtor



If you're prepared to overclock, you'll stand to gain in performance from MSI's HAWK.

9/10

Corsair Dominator GTX

RAM enthusiasts have a tough decision to make.

Corsair
www.corsair.com
US$200 per module

✔ Extremely fast; a real enthusiast's product.

✖ Expensive; individual module purchase can be confusing.

SPECIAL FEATURES
GTX1 2,400MHz DDR
GTX2 2,250MHz DDR

APC MAGAZINE'S HIGHLY RECOMMENDED

Expanding on its already strong Dominator GT series, Corsair has released the Dominator GTX to cater to the high-end market. The GTX1 kit carries a huge default clock of 2,400MHz DDR at 9-11-9-27-2T. The other kit, labelled as GTX2, has a slightly lower default clock of 2,250MHz DDR with 8-8-8-24-2T timings making it much more aggressive.

When it came to the performance of the two kits our results were very different. With the GTX1's default clock speed being so high we could run our CPU at 4.2GHz. The GTX2s instead ran our CPU at 3.9GHz, which meant in all programs it was trailing.

Where the dynamics changed though was when it came to overclocking, the 2,400MHz kit gave us no headroom, while 2,350MHz was achieved with the GTX2s at the default timings. Pushing our CPU to just over 4.1GHz and the aggressive nature of the timings meant performance was blistering and faster in RAM related tests then the 2,400MHz kit. This makes the decision on what kit to buy harder. Since you can't get a guarantee that the GTX2 will achieve 2,350MHz, if high MHz RAM is what you want the 2,400MHz GTX1 kit is the best option. If your priority is tight timings the GTX1 is going to be a better option; you can then hope you have the same overclocking luck as us.

Just know whatever kit you decide to buy, the bank account is going to get hit hard. It's also worth adding in the Corsair Airflow 2, which will set you back a little bit more money again.

Shane Baxtor



9/10

G.Skill PC3-17600 PI Series

G.Skill makes 2,200MHz affordable.

G.Skill
www.gskill.com.tw
$299

✔ 2,200MHz DDR; extremely fast; active cooling included.

✖ Expensive for 4GB; for advanced users; active cooling feels cheap.

SPECIAL FEATURES
2,200MHz clock speed
Active cooling

APC MAGAZINE'S EDITOR'S CHOICE

G.Skill continues to bring smiles to enthusiasts' faces with higher and higher memory speeds. Not only has it released a 4GB PC3-17600 2,200MHz kit under the PI series, it's also announced PC3-18400 and PC3-19200 kits that will carry clocks of 2,300MHz DDR and 2,400MHz DDR respectively.

While 2,200MHz sounds scary, getting to that clock speed isn't all that hard these days thanks to the range of multipliers on offer.

The PC3-17600 has active cooling and G.Skill has relaxed the timings to a 7-10-10-28-2T setup versus the 8-8-8-24-2T one seen in last month's A-DATA kit. Comparing the performance of the two kits, the G.Skill does lag slightly behind in synthetic tests because of its 7-10-10-28-2T setup. When it comes to real-world performance you'll see very little difference, which for most is more important.

What's so amazing about the G.Skill kit is that by relaxing the timings slightly — which has only a minor effect on performance — it's able to be significantly more aggressive with the pricing, which is half that of the A-DATA kit. Throw in the inclusion of active cooling and you end up with a good-value kit of PC3-17600 memory.

On the down side, while the kit we have here does come with active cooling, the plastic design feels quite cheap. We wouldn't feel too confident if we had to install and remove the cooler too many times.

Shane Baxtor



9/10

HIS HD 5750 1GB iCooler IV

HIS welcomes HD 5750 into the iCooler series.

HIS Digital
www.hisdigital.com
$199

Good cooling; value for money; mid-range performance.

Stock clocks; one Dual-Link DVI.

SPECIAL FEATURES
iCooler cooler

APC MAGAZINE EDITOR'S CHOICE

Budget-conscious gamers have never had it so good, with ATI releasing a strong line-up of mid-$100 to $200 cards that are capable of gaming at 1,680 x 1,050 and 1,920 x 1,200. If you're happy to spend more and want to overclock with an upgraded cooler, the HIS HD 5750, might be the card for you.

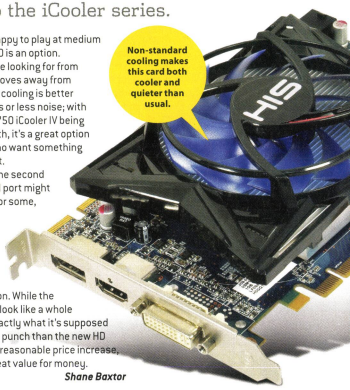
Choosing to stick with the default clocks of 700MHz on the core and 4,600MHz QDR on the 1GB of GDDR5 memory (while being boring) doesn't come as a surprise since we'll no doubt see a Turbo variation of the model in the future. The big deal about the iCooler series is the cooler, and while it doesn't look like anything fancy it manages to do a good job compared to the stock HD 5750 cooler, heat is down almost 2 degrees, while noise levels have dropped 3dB when at full load.

When it comes to gaming, performance is unchanged from the last HD 5750 we looked at. What this means is we're able to see good numbers at 1,680 x 1,050 with the detail set to high, or if you're happy to play at medium 1,920 x 1,200 is an option.

What we're looking for from a card that moves away from the standard cooling is better temperatures or less noise; with the HIS HD 5750 iCooler IV being able to do both, it's a great option for people who want something a bit different.

Lacking the second Dual-Link DVI port might be an issue for some, though with DisplayPort and HDMI still present EyeFinity continues to be an option. While the card doesn't look like a whole lot it does exactly what it's supposed to. A bit more punch than the new HD 5670, with a reasonable price increase, gives you great value for money.

Non-standard cooling makes this card both cooler and quieter than usual.



Shane Baxtor

8/10

WD My Book 3.0

Does this spell the end of FireWire?

Western Digital
www.wdc.com
$249

Excellent performance; includes USB 3.0 PCI Express card.

No SmartWare or hardware encryption.

SPECIAL FEATURES
1TB of storage
USB 3.0

APC MAGAZINE HIGHLY RECOMMENDED

With USB 3.0 on the cusp of widespread adoption, WD has released its first ever USB 3.0 drive. Don't worry if your PC doesn't have a USB 3.0 port yet, because WD has included a single-lane PCI Express USB 3.0 add-in card.

Installing the card (based on NEC's PD720200) is easy, though we recommend getting the latest drivers off the WD site rather than the outdated driver disc.

It's strange to see that WD's fastest external drive is missing the e-label capacity screen of its lesser brethren, especially considering just how fast USB 3.0 will allow you to fill this. Speaking of USB 3.0 — let's get to the fun bit. How fast does this bad boy perform?

With a maximum theoretical bandwidth of 5Gbit/s (640MB/s), USB 3.0 should offer phenomenal speeds. While real-world performance didn't come close to touching this due to the drive's mechanical limitations, the results were still nothing to sneeze at.

Using HDTach, we recorded a remarkable average read speed of 88MB/s. Writing was equally impressive, maxing out at 64MB/s.

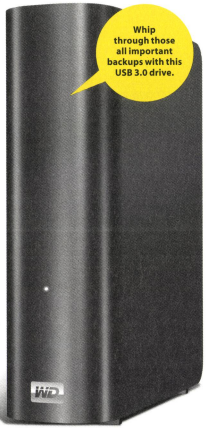
These speeds are slightly faster than equivalent FireWire 800 drives, and only just short of eSATA equipped drives. For those of you accustomed to USB 2.0 drives, our performance results were nearly three times the speed of past USB 2.0 drives from WD.

Unfortunately, the My Book 3.0 is missing a couple of features that we've come to expect from WD drives. There's no hardware encryption for your top secret files, and WD's simple yet versatile SmartWare was also missing from our review sample. No doubt these will reappear in the next version.

If you're looking for the speediest method of external back ups, USB 3.0 is the way to go, and WD's My Book 3.0 offers excellent support for this new connection type.

Bennett Ring

Whip through those all important backups with this USB 3.0 drive.



8/10

Sapphire HD 5670 GDDR5

Budget-conscious users get a taste of HD 5000 series.

Sapphire
www.sapphiretech.com
$149

EyeFinity support; GDDR5; good value; no extra power.

One Dual-Link DVI; many variations.

SPECIAL FEATURES
1GB of GDDR5

APC MAGAZINE HIGHLY RECOMMENDED apc

Recently we've seen ATI release new top cards and work downwards. NVIDIA on the other hand started at the bottom and are working towards the top. A new month brings with it a new model and in this case it's a mid-range ATI offering, the HD 5670.

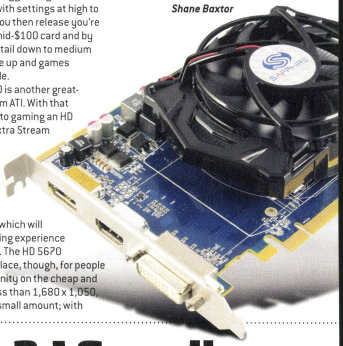
The model carries with it everything you would want from a mid-range card, 1GB of GDDR5, EyeFinity support and an Arctic Cooling heatsink fan setup. On the technical side of things we've got 400 Stream processors — this is down from the 720 found on the HD 5750, which is the next model up.

Apart from the Stream processors, many areas share similar numbers to the HD 5750: 128-bit memory bus and 16 ROPs. The core is up 75MHz, coming in at 775MHz, while the memory is down 150MHz at 1,000MHz or 4,000MHz QDR. The change that is really going to make the difference to the performance here when compared to the HD 5750 is the drop in Stream processors.

Looking at the numbers is a mixed bag: at first you feel disappointed that the card struggles in games at 1,680 x 1,050 with settings at high to very high, but you then release you're dealing with a mid-$100 card and by dropping the detail down to medium the numbers are up and games become playable.

The HD 5670 is another great-value model from ATI. With that said, if you're into gaming an HD 5750 with its extra Stream processors will handle 1,680 x 1,050 at higher detail or 1,920 x 1,200 at medium detail, which will make your gaming experience more enjoyable. The HD 5670 clearly has its place, though, for people who want EyeFinity on the cheap and who game at less than 1,680 x 1,050 or game only a small amount; with many variations, including GDDR3 ones, just make sure you get the GDDR5 model.

Shane Baxtor



7/10

ASUS uBoom 2.1 Soundbar

Good sound, but totally useless for notebooks.

ASUS
www.asus.com.au
$189

USB sound; auxiliary inputs for iPod; funky design.

Mediocre bass; no digital audio inputs; too big for notebooks.

SPECIAL FEATURES
All speakers in the one tube
Angled satellites; great stereo field

Not quite right for a notebook, but great for your desktop PC.

The ASUS uBoom is a funky speaker tube designed for notebooks, although being 570mm long and weighing several kilos, it is not something you would want to cart around. In our opinion, something this size would be better placed under a monitor, so it may be more useful as a desktop speaker system.

If you have the room, the ASUS uBoom is quite impressive. Both satellite speakers (for mid-range and treble) and the "subwoofer" are housed in a brushed aluminium tube with black vents on top for the subwoofer, with a blue LED to indicate power.

Connecting the unit is a simple matter of plugging the power pack into the mains and connecting the uBoom to your computer via a USB cable. Since the uBoom is effectively a USB sound card, no additional drivers are required and it bypasses the sound card built into most notebooks.

The satellite speakers are positioned at an angle at the ends of the tube, which gives an excellent stereo field that sounds considerably wider than the unit physically is. This would be great for gamers as the sounds appear to come from the sides of the monitor rather than being cramped in the middle. Overall sound quality is better than most computer speakers, with well-defined treble and, to our ears, perhaps a little over-emphasised mid-range, which makes the sound a little unbalanced. Bass response is mediocre at comfortable listening levels, however if you are prepared to crank up the volume you will get the room to rattle.

The unit looks much better than most, and as they're integrated in the one tube you don't have wires running all over the place. In fact, the only things missing are digital audio inputs.

David Neiger



7/10

Belkin Double N+

Feature-rich Wi-Fi lightshow.

Belkin
www.belkin.com.au
$280

Dual band Wi-Fi; Gigabit Ethernet.

Unsolved problems with UPnP AV server.

SPECIAL FEATURES
BitTorrent client
UPnP AV server

The Double N+ includes the usual features such as Dual 2.4GHz and 5GHz 802.11n Wi-Fi, four Gigabit Ethernet ports, firewall, DHCP, NAT, UPnP, WPS, remote management and so on.

Setup was uneventful, except for the usual bugbear of wireless being turned on by default but with no security. The setup assistant takes care of the basics, but if you've ever configured a router you'll find it just as easy to go straight to the web interface.

We're not big fans of blue LEDs, but at least they can be dimmed on this unit. Particularly useful are the lights showing any active Wi-Fi or Ethernet connections, and whether the router can reach the internet. When transient problems arise, the reconnect button may solve them by using the quietest Wi-Fi channel to reconnect with the modem. The ability to disable the Wi-Fi radios at a certain time of day is positioned as a 'green' feature but it also has some security value.

A USB port allows connection of a storage device for use with the BitTorrent client, UPnP media server, or file server.

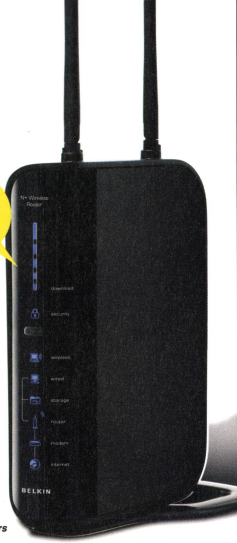
Strong performance, with a few niggles.

The shared storage feature worked well, but the UPnP AV server wouldn't talk to a Sony TV, Xbox 360 or XBMC, even though they all worked with another server on our network.

As for performance, the Double N+ proved slightly faster than the Netgear WNDR3700 at 2.4GHz, and at 5GHz delivered decent performance at the maximum range possible.

The automatic QoS feature seemed to work well but the graph that was supposed to show traffic in the four QoS categories refused to display. Belkin's first and second level technical support failed to come up with an answer, and the promised callback from a level three engineer did not materialise.

Stephen Withers



8/10

Netgear RangeMax

Keep in your data quota.

Netgear
www.netgear.com.au
$299.00

Dual-band Wi-Fi; Gigabit Ethernet.

Relatively bulky.

SPECIAL FEATURES
Traffic meter
NAS and UPnP AV server

As we've come to expect from higher-end wireless routers, the WNDR3700 provides four Gigabit Ethernet ports along with dual-band 2.4GHz and 5GHz 802.11n Wi-Fi. Energy-saving features include automatic adjustment of the power level on the Ethernet ports, and the ability to vary the wireless transmitter power. A wizard built into the web interface makes setup simple. If you're worried about wireless security use the front-panel button to disable Wi-Fi until you're satisfied with the settings.

Wireless performance at 2.4GHz was respectable between diagonally opposite corners of the premises, with the signal passing through multiple walls, but the 5GHz side would not connect at all at that distance. The list of features is definitely on the comprehensive side, including UPnP, QoS, WPS, and port forwarding and triggering.

If you're of a mind to control people's internet access, the unit provides filtering by keyword or domain name, and blocking by service (TCP/UDP/port range) — with provision for specifying 'trusted' IP addresses. Blocking can be limited to particular times and days.

Another welcome provision is a Guest network for visitors' use. This can be restricted to internet access only, preventing guests from digging around in your shared folders. And on that subject, the WNDR3700 will share a USB storage device that's plugged into it.

It's possible to create a list of authorised devices to stop other drives being shared. SMB is supported on the LAN side, and HTTP and FTP can be used locally or from the internet. The router also acts as a UPnP AV server and — unlike the Belkin Double-N+ — this feature worked properly.

We also liked the traffic meter that can give you advance warning when you approach the quota. It would be even more useful with separate tallies of the usage of each connected device.

Stephen Withers

Lots of features will attract many to Netgear's latest.



9/10

HP Officejet 6000

A true colour laser alternative.

HP
www.hp.com.au
$149

Affordable networked small office printer. ✔

Minimal software. ✖

SPECIAL FEATURES
Ethernet
High print quality

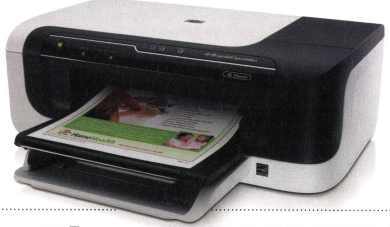
APC MAGAZINE EDITOR'S CHOICE

With Ethernet and USB as standard, the Officejet 6000 is positioned as an alternative to laser printing for small offices. The software bundle is extremely limited, but installation and setup was a snap, including automatic detection of the networked printer. The four-cartridge design minimises wastage. Replacement colour cartridges give a nominal 700 pages, but as black is said to be good for just 420 pages, the high-capacity (1,200 page) variant is worth considering.

The nominal print speed is 7ppm in black or colour (up to 32ppm claimed for draft mode). Our usual two-page test document printed in 48 seconds; the run-on speed for the second page was 15 seconds, equivalent to 4ppm. HP describes the output as "laser quality text" and it comes extremely close to living up to such a claim. In a side-by-side comparison, the Officejet's characters are slightly heavier, but even under a magnifying glass any difference in sharpness is marginal. The black ink is particularly dense, which probably helps. For business graphics, the colours are appropriately bright. Despite the inclusion of Photosmart Essential, the Officejet 6000 isn't really positioned as a photo printer; there's just one tray and loading small sized paper is awkward. But our test shots came out well on HP Advanced Photo Paper.

HP claims the Officejet 6000 delivers 40 per cent less cost per page and energy use when compared with low-end colour lasers. Taking that at face value, it is certainly an affordable way of getting high-quality output for a small office with more than one computer, but the absence of a duplexer is probably a shortcoming for an office environment.

Stephen Withers



6/10

Fuji Xerox Phaser 3100MFP/S

Check the driver situation before you buy.

Fuji Xerox
www.fujixeroxprinters.com
$339

Relatively speedy personal printer. ✔

Minimal software; no fax function. ✖

SPECIAL FEATURES
Standalone scan and print
Prints Sudoku puzzles

The Phaser 3100MFP/S isn't a brand new model, but this personal monochrome laser multifunction device is relatively new to Australia. While it has a reasonably compact footprint, like most of its kind it is somewhat bulkier than you'd really want on your desk. Although drivers for Linux and Mac OS X are included, there are no Snow Leopard-compatible drivers. While Fuji Xerox says there is no support for Windows 7, the drivers provided seemed to work correctly.

For some reason, the software installer created a fax print queue even though the 3100MFP/S lacks that capability. Apart from the drivers and utility suite, all you get is Nuance's PaperPort SE 11 for Windows. While that's a decent program for making and managing scans, it lacks some desirable features such as OCR that are often included with MFDs. Print quality is fairly typical for the price range. The toner appears charcoal rather than black, but on the other hand has a decidedly matte finish. The 3100MFP/S came close to meeting the nominal first-page-out time in our testing: 15 seconds vs the claimed 13. And it was spot on when it came to throughput: the second page of our test document emerged in another 3 seconds. A curious feature is the built-in ability to print Sudoku puzzles on demand.

Colour and mono scanning gave perfectly adequate results, and the 3100MFP/S also has a front USB connector for scanning to and printing from storage devices. A single-page copy can be made in 30 seconds, including warm-up from power-saving mode.

An extra $60 buys the 3100MFP/X, which includes faxing and a 50-sheet document feeder. If you scan or copy many multi-page originals, the ADF alone may justify the additional cost.

Stephen Withers



8/10

Sony Bloggie HD Webcam

Sony finally enters the mini HD camcorder category.



Sony
www.sony.com.au
$299

Full HD image; rotating lens; face detection.

Could do with image stabilisation.

SPECIAL FEATURES
1,920 x 1080 resolution
5MP stills
360-degree shooting
SD card slot

As seen in our labs roundup in the December issue of *APC*, mini HD camcorders have become a new and cheap option for the average consumer to capture decent-quality video at a low price. Granted, they do not offer the image quality of a full-sized HD camcorder, but at less than $300, you certainly do get a lot of bang for your buck.

Sony has entered the market in Australia with the Bloggie Webcam, and it's one of the first on the market to offer true 1,920 x 1080 image resolution in this format. Like other mini HD camcorders, the Bloggie has a small form factor with minimal controls. What sets it apart from the competition is the lens' ability to rotate vertically up to 270 degrees, allowing users to shoot what's in front, behind or even above them. The addition of a lens attachment offers a novel way of shooting 360 degree video, which can be viewed as one extra-wide (and distorted) panoramic, or it can be viewed in smaller scenes.

Image quality is slightly better than that of the JVC PICSIO, mainly due to the Bloggie's use of face detection technology that seems to allow for quicker focusing and better exposures. Sadly, the 4x zoom, like in other mini HD camcorders, is pretty weak and of not much use.

The Bloggie has an SD/SDHC card slot for expandable memory and comes with a 4GB Memory Stick, which will hold up to 2 hours of HD video. If you're after something cheap that will record decent video for home use while also taking passable 5MP still photos, then the bloggie is a product well worth considering. Although, if you're after the best quality for your home movies, then a full-size camcorder might be the best option.

Christopher Zammit

9/10

Canon EOS 550D

Bigger, better and brighter than its predecessor.

Canon
www.canon.com.au
From $1,349 (body only)

Great images; beautiful screen; quality build.

None.

SPECIAL FEATURES
3in LCD
18 megapixels
6400 ISO
Full HD movies
LiveView

Canon's latest entry-level DSLR is a vast improvement on its predecessors, the 450D and 500D. An improvement in image quality, a larger (and clearer) LCD screen as well as a boost in megapixels make it an appealing piece of kit.

The first thing we noticed on picking up the 550D is that it is about the same size as the 500D, despite the massive 3in LCD display on its rear. The screen is an impressive improvement that is not only brighter but also a lot clearer than anything we've seen before. Users now have the ability to preview a stored image at full magnification and still see a sharp picture with no pixellation. This is quiet a feat considering that the 5500 now has a DIGIC 4 sensor with 18 megapixels, which allows for much larger prints.

The ISO has also had a boost with a maximum of 6400 and up to 12800 extended. This allows for more natural-looking shots in low light and less dependence on the built-in fill flash.

The HD video mode is also improved due to the introduction of the 'Movie Crop' mode, which allows users to crop and magnify the centre of a HD image to the equivalent of 7x zoom. This is a digital process, so your video in this mode will drop back from high to standard definition, although it is useful for getting a lot closer to your subjects.

9-point auto-focus and a fast shooting speed of 3.7 frames per second should keep all but the pros happy. LiveView shooting via the LCD screen is a simple process that is a pleasure to use. In full auto, the 550D does all the work for you and can produce some great images with rich colours and fine detail.

Christopher Zammit



Up and away: Canon's latest entry-level impresses on many fronts.

9/10

Pioneer BDR-205

The world's fastest Blu-ray burner.

Pioneer Australia
www.pioneer.com.au
$369

Fastest Blu-ray burner; supports all CD, DVD and Blu-ray formats.

Lack of 12x Blu-ray media; high cost of media.

SPECIAL FEATURES
PowerDVD suite
BD-R and BD-RE support

APC MAGAZINE'S EDITOR'S RECOMMENDED

From the outside this unit looks like any other Blu-ray/DVD burner, with a SATA interface on the back (and cables included in the box). Installing the unit was fairly straightforward, as it simply slots into any free 5.25in drive bay and connects to the SATA controller. Vista and Windows 7 immediately detected the drive, and after loading the supplied PowerDVD suite we were ready to burn.

Unfortunately, despite ringing around to various suppliers, we were only able to source Verbatim 4x BD-R and 2x BD-RE media for our tests. The unit performed well but obviously we couldn't run it at full speed. Perhaps by the time you read this 12x media may be available, although if the price of 4x media is anything to go by, it will not be cheap.

As well as burning both BD-R and BD-RE disks, the unit supports all current DVD formats including DVD±R/RW and DL media at a write speed of 16x for single layer ±R media and 8x for other dual layer and rewriteable media. DVD-RAM is also supported at 5x read and write speeds.

The supplied software is easy to use, although only the older DVD Suite 7 is provided rather than the current version 8. It is adequate for backing up large amounts of data for archives and does allow you to burn high-definition movies from your camcorder, although if you are serious about Blu-ray creation you would be better off with another package.

In terms of features, this drive is the one to get, although you may be waiting a while before you can take full advantage of its performance.

David Neiger



9/10

DViCO TViX M6600-N

One of the most powerful media servers on the market.

DViCO
www.dvico.com
$699

Everything just works.

Interface could be prettier.

SPECIAL FEATURES
1TB of storage
Dual HDTV tuners
Supports H.264 codec (Profile 4.1), MKV and RMVB

APC MAGAZINE'S EDITOR'S CHOICE

It might not look like much, but the TViX M6600-N offers the functionality of several devices. Best of all, DViCO hasn't scrimped on any one feature, with each capability of the M6600-N offering excellent performance.

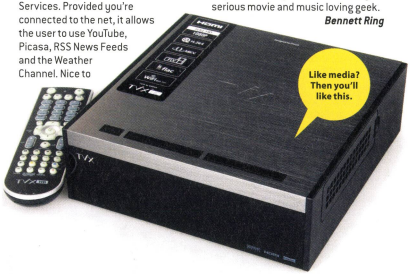
It's one of the only PVRs on the market to support 1080p playback and recording, outputted via HDMI 1.3a. It's missing component output, but we're happy to see this ageing connection go the way of the dodo. Dolby Optical out is included, for those with older AV receivers. A single hard drive offers a terabyte of recording space, and replacing this with larger drives couldn't be easier. EPG functionality is clean if simplistic. Skipping adverts is easy, as this isn't a Freeview-compliant device.

It also offers a robust media player experience, supporting all of the latest formats such as DivX (including 1080p MKV files), and DVD backups in both ISO and VIDEO_TS formats. These can be streamed from your PC via Ethernet or 802.11n, though we recommend a wired connection for high-res files. Obviously images and audio files are also able to played, and it's nice to see the inclusion of FLAC support.

Finally, DViCO offers what it calls IMS, standing for Internet Media Services. Provided you're connected to the net, it allows the user to use YouTube, Picasa, RSS News Feeds and the Weather Channel. Nice to have, but probably not terribly useful for the majority of *APC* users.

The beauty of this device is that everything works and works well. We had no problems setting up the box, and every file type we played back worked perfectly. Considering the excellent hardware configuration, the price is a bargain. A must for any serious movie and music loving geek.

Bennett Ring



9/10

Panasonic TH-P54Z1A plasma

The new king of the plasmas.

Panasonic
www.panasonic.com.au
$5,999

Looks stunning; fantastic HD performance; wireless; great value.

Less comfortable with SD TV; not ideal for bright rooms.

SPECIAL FEATURES
54in screen
1in thick
Full 1080p/24 wirelessly

APC MAGAZINE apc EDITOR'S CHOICE

Sony blew us away with its wireless, super-thin, ZX-series LCD TV last year, but it was excessively priced, small and performance was mediocre. Around the same time Panasonic showed us its planned super-thin plasma but only now has it come to market. Out of the box, it's stunning. At barely one inch thick all over, it's crazy thin for any TV — let alone a plasma. It's only available in a 54in model and weighs 32kg (with speakers and no pedestal) which might seem like a lot, but it's some 20kg lighter than other similar-sized plasmas.

In addition to the thinness is the wireless ability, which transmits a Full HD picture across a room using a 60GHz signal (this requires line of sight). However, while the Sony couldn't manage beyond 1080i, this supports full 1080p/24 wirelessly. It doesn't matter if someone walks through the beam thanks to what Panasonic calls 'Beam Steering Technology' but standing directly in front of it is another matter.

The best news is that picture quality is as good as its external looks — which are indeed classy thanks to silver and black trim and matching speakers on the sides. Sport in HD looked fabulous. Colours were bright and vibrant, detail superb and contrast was excellent with true blacks.



It's official: this is our favourite TV, and it should last you until 2012.

Motion smoothing was very good too although its 600Hz subfield drive can't quite match LCD's 200Hz performance for absolute fluidity. Movies looked far better than on LCD. The great contrast was noticeable thanks to the superior blacks and the motion smoothing didn't ruin the look of films, which 200Hz LCDs are prone to do.

Plasmas inherently have issues with 'plasma fizz' which, up close, looks like the pixels are fizzing. This is comparatively minor on the Z1 and is barely noticeable from a couple of metres away. People with bright rooms may find the picture a bit dark though.

Regular HD TV was a joy to watch. Upscaled SD performance wasn't too bad either, but be prepared for some fuzziness and jaggies around fine-detailed areas plus image aberrations in panning shots. Low-quality broadcasts will always look bad on screens this size, but while Sony may still be king of upscaling, it doesn't make screens this big, and we'd happily watch this ad infinitum.

Elsewhere, gamers needn't fear for lag as it waltzed through our Guitar Hero tests. The twin, detachable, 10W speakers got loud and punchy. Connectivity is good thanks to the transmitter unit's four HDMI inputs, two component, three composite, S-Video and optical S/PDIF jacks. The transmitter also sports an SD slot for direct playback of slideshows and AVCHD movies. The remote is responsive and intuitive and the TV Guide is simple to access and read.

All in all this is our favourite TV and $5,999 is a fair price for it. Sony's ZX LCD is now $1,000 less but 14 inches smaller and Samsung's thin LED LCDs and thin-plasmas don't offer as good picture quality. Panasonic's V-series received our Editor's Choice Award last month, but if you want thin and wireless then this is for you.

Nick Ross



80Mbps Network Link

Preconfigured- just 'Point-n-Play'

FreeNet Antennas

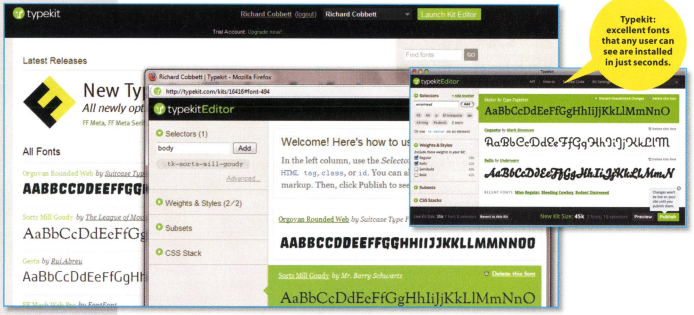


- Built-in electronics
- 20m power/ethernet cable
- Wireless-N

Just $868/pair

Dealer inquiries welcome

www.freenet-antennas.com/bridge-n



Typekit

Bored with your site's typography?

Typekit
www.typekit.com
Free to US$250/year

Falls back to using regular web fonts on unsupported systems.

Continual paid reliance on Typekit server.

SPECIAL FEATURES
JavaScript font tool
Multiple libraries
Easy archive searching

Fonts are one of the web's biggest weaknesses. That's not because it's impossible to break out of the standard mix of Times New Roman, Verdana, Trebuchet and so on, but because attempting to do so is maddeningly inconsistent. You can specify any font you like on a web site, but if the user doesn't have it on their system, it's not going to look right. As a result, designers have always had to stick with either the safe-bet fonts that everyone has or throw in extra technology, such as the Flash headline-rendering SIFR or scraps of PHP that render text out as static image files, to make things work.

However, we're finally seeing some change. CSS enables an attribute called @font-face, which lets you point a web browser to a standard TrueType font online and use it as though it was installed on the user's own machine. All the major browsers now support this, although it's only recently that anyone's been in a position to use it. The only real downside is that font licensing is a hellishly complicated business. In this context, are you merely using the font when it's used to display, or are you distributing it to everyone who visits your web site? There are free fonts out there, but the professional ones cost money, and getting caught using one without the proper licences wouldn't be much fun.

Typekit acts as your online font archive, with no strings attached. It offers several packages, from a freebie that lets you use two fonts on a site in exchange for a little icon through to unlimited access to the whole collection for US$250 a year. At the moment, the various yearly plans are flagged as 'Act now' and are reasonably priced — we can see bloggers paying US$25 a year to jazz up a site, but US$7 a month is another story. Each comes with a 30-day trial, so you can play with the available fonts as much as you like.

The service plugs into your existing design via a couple of lines of JavaScript, so no redesigning is required. If a user's browser doesn't support the @font-face implementation that Typekit uses, they get the standard CSS and never need know they're missing out. An annoyance with @font-face rather than Typekit itself is that fonts can be large files, which can result in the site appearing without its new look, then 'snapping' to the prettier version. It's much more noticeable if you've done something dramatic to lots of copy.

The only major downside is that by using Typekit, you're making your site reliant on an external service for core functionality: paying a recurring subscription and relying on it not to go down. On the other hand, at least it'll still look fine if anything goes wrong. Redesigning your site on the fly is incredibly easy. Typekit offers a simple interface that makes adding a new font as easy as clicking on the one that you like.

The fonts Typekit offers are an interesting mix with the focus firmly on professional and readable type. All of them are sorted by tags, from the obvious serif and sans serif down to sci-fi and grunge, with plenty of specimens and a type tester. If you pick one that doesn't look good, just remove it and try another — no charge.

Typekit is an extremely well thought out and easy to integrate solution to one of the web's most persistent design problems. If you're able to self-host your own fonts, you don't need it, but it certainly makes a very fiddly process much cheaper and easier. It's the perfect way to make text stand out, and great for adding punch to headers without breaking away from the purity of raw text.

Richard Cobbett

7/10

Quicken Personal Plus 2010

Keep your dollars under control.

Reckon
www.quicken.com.au
$199

Comprehensive personal finance tools.

Intrusive protection scheme.

SPECIAL FEATURES
Tax planning
Portfolio tracking
Rental analysis

Quicken Personal Plus is a good way of keeping your financial affairs in order, providing they're sufficiently complex. By keeping track of your income, expenditure, savings and investments, it can tell you where you stand and where you're heading.

In addition to the everyday ins and outs, the software makes it easy to track the performance of a share portfolio, with one-click downloading of current and historical price information. If real estate is your thing, Quicken Personal Plus now includes integration with Reckon's Elite Rental for gearing analysis, and a restricted version of that program is included. However, we were unable to get it to pick up all the relevant data from Quicken, even with Reckon's help.

The way categories auto-complete helps to minimise typing: "T" expands to "Telephone", and then you can use the down-arrow key to select fixed or mobile (assuming you want that level of categorisation). But the more mouse-centric user might be disappointed to discover that scrolling lists do not respond appropriately to the wheel.

Quicken tries to reduce the workload associated with processing regular events such as monthly bills and your pay cheque. If you set up a recurring event, the program prompts you at the appropriate time, and you only need to make any adjustments rather than entering all the details. Very sensible.

But one of Quicken's functions is calculating your expected tax liability, which requires a record of PAYG deductions, and curiously there's no predefined account for them. Reckon suggests creating a category called "Tax", marking it as "Tax related", and then associating it with "Question 1 & Question 3: Tax instalments deducted".

Another wrinkle is that you have to explicitly tell the Tax Planner to bring in the data from Quicken — where else is it going to come from?

If you're trying to eliminate as much paper as possible from your home or office, Quicken can attach a scanned image of an invoice or other document with the transaction record. This is a good way of managing electronically delivered invoices etc, as it handles HTML files as well as PDF and other image formats.

The Quicken desktop widget is a useful accessory, as it shows if there are any upcoming transactions, overdue bills or cheques to print without having to open the program.

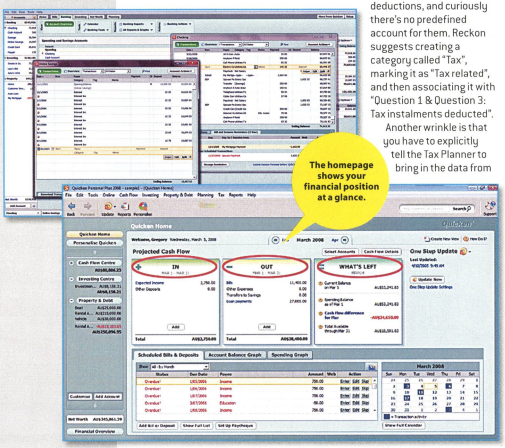
You're forced to activate and register the program, and you may be charged extra if you need to reinstall (eg, after a hard disk failure). A shortcoming of Reckon's protection scheme showed up when — a few days after installation — Quicken decided it was no longer on the original computer, and refused to run. Reckon's advice was to re-enter the original licence key, and fortunately that did the trick.

You really won't want to call the tech support line if you can help it, as you'll be slugged $4.90 per minute, yet we can't remember the last time we had to ask a vendor so many questions in the course of a review.

Before you buy this type of product, you really need to ask yourself what you expect to get out of it. Back in the day, your reviewer used Quicken to keep track of where his money was coming from and going to — but eventually he realised it was wasting a couple of hours a month that would never be recovered — his financial situation was just too simple.

If your affairs are more complex, if your cashflow is finely balanced, or if you are concerned about keeping the maximum amount of cash in interest-bearing accounts for as long as possible, Quicken's facilities will come into their own. For those who don't need the investing, planning or tax features, Quicken Personal is $79.

Stephen Withers



Best apps

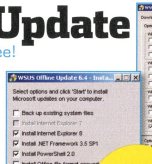
There's an app for pretty much anything you want to do. Here we take a look at our favourite ones.



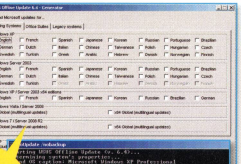
WSUS Offline Update

A ripper of a DVD burner... and it's free!

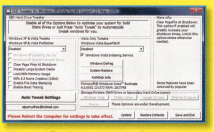
Even though we're in the age of the internet, it does not follow that every Windows PC or server is connected to the net. It makes updating Windows and Microsoft Office on these machines a complete pain since they're not getting the Windows Update service. Some German developers have created free software, WSUS Offline Update, which lets you run Windows Update on any Windows PC without a connection. The software covers Windows OSs back to XP and Server 2003, as well as versions of Office back to Office XP. With it, you download updates for Windows or Office on an internet-connected computer, generate an ISO (disc) image and burn it to DVD, then run the updates on the unconnected computers.



Need to update your machines that aren't online? WSUS makes it easy.



Free > WSUS Offline > www.wsusoffline.net



Tweak for SSD drives

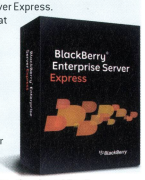
Early adopters of first-generation SSDs found out the hard way that while the drives performed spectacularly at first, they would eventually slow because they needed to do a full block-level erase and rewrite every time they wrote to disk. The Windows TRIM command supported by most second-generation SSDs fixed this along with the Wiper.exe software, but there was nothing for first-generation users until SSD Tweaker. This free program works by reducing the number of write functions on the drive, ranging from the Windows Indexing service to Superfetch, and the user can tweak the settings to suit.

Free > SSD Tweaker > tinyurl.com/yetvun9

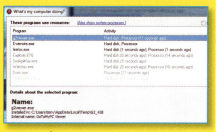
BlackBerry Enterprise Server Express

Until now, small businesses that have considered adding the BlackBerry as a new staff communication tool have been put off by the costs of RIM's Enterprise BlackBerry Server, which comes with heaps of corporate functionality not needed by smaller businesses. It's now become easier for SMBs to add the BlackBerry service or to connect the personal BlackBerries of employees to work email as RIM has now announced BlackBerry Server Express.

It's software that will wirelessly synchronise BlackBerry smartphones with Microsoft Exchange or Microsoft Windows Small Business Server software.



Free > BlackBerry > tinyurl.com/yfbarzj



What's my computer doing?

This is a simple utility that monitors what programs and processes are accessing your hard drive and using system resources, so you have a snapshot of what's going on with your machine. It also provides information on the programs, such as when it was installed, its folder and whether there are any known issues with it. It also lets you terminate the program, or check it for malware by sending it to Kaspersky. In essence, this utility does nothing that you can't do with Task Manager, but it's easier to call up when you suddenly get that annoying slowdown.

Free > Easy2Sync > tinyurl.com/yccj57t

App Store

Peter Dockrill scours the App Store and reviews the best apps available for the iPhone and iPod touch.



FileViewer

One of the most surprising things about the iPhone (and a real limitation, unfortunately) is how 'locked down' the whole thing is: the device feels more a collection of disconnected apps and functionalities rather than an integrated computer. And this is where third-party apps come to the rescue to fill in the gaps. For example, the iPhone isn't natively visible to PCs as a generic data transfer/storage drive — FileViewer is one of the apps that can rectify that (via Wi-Fi) and works with Win/Mac/Linux.

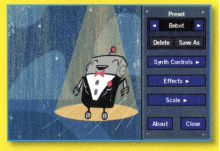
Free > **Mitchell Cohen** > **http://tinyurl.com/yzfre4q**

FF: The Warlock of Firetop Mountain

If you're a male and spent a portion of your youth in the 1980s, there's a good chance you remember the *Fighting Fantasy* (FF) gamebooks. A cross between the more kid-focused Choose Your Own Adventure series and a tabletop RPG, *Fighting Fantasy* provided an interactive fictional experience for a whole generation pre-MMOs, Harry Potter and Pokemon. Now, the first of some 60-something titles has been lovingly ported to the iPhone — no pencil or dice required.



$3.99 > **Big Blue Bubble** > **www.bigbluebubble.com**



Bebot — Robot Synth

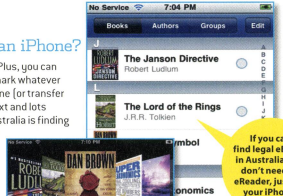
Part-toy, part-cartoon and part-synthesizer, Bebot epitomises the one-of-a-kind charm, creativity and randomness you can find all over the App Store. At heart, it's a live synth tool. It supports four-finger multi-touch, a number of different pre-set voices, synth modes, auto-tune features, heaps of configurability — and that cute little animated robot to boot, who sings as you play. It's not what you'd call a 'serious' music creation app, but there's a lot of power in this and it'll bring a smile to your face.

$2.49 > **Normalware** > **www.normalware.com**

Stanza

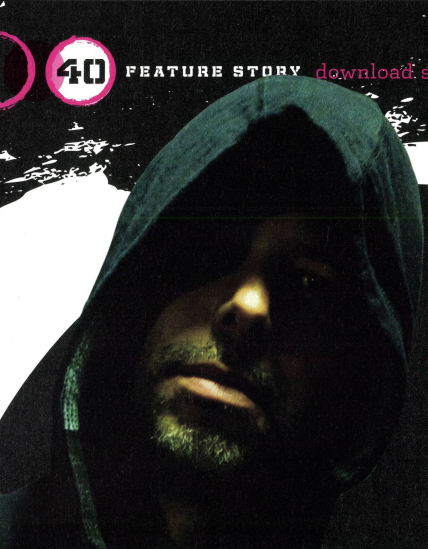
Who needs a dedicated eBook reader when you have an iPhone?

The arrival of the iPad and its eminent suitability to eBooks (and eReading generally) has put the spotlight squarely back on the Kindle — will the reigning eReader survive the now markedly increased competition from Apple's device? You'd think so — if only for the Kindle's unique paper-like display and low power consumption (not to mention its established user base). But the thing is, you don't need a dedicated Kindle or an iPad to get into eBooks, any iPhone or iPod touch is sufficient. Stanza is a free program that displays electronic books on your iDevice, and in a multitude of formats (.pdb, .epub, .azw, .pdf, .doc etc.).The interface is nice and intuitive: tap right-screen to turn the page, left to turn back, for options, and sliding vertically customises brightness. Plus, you can choose font size (and font), bookmark whatever you like, source books directly online (or transfer from your PC), search within the text and lots more. Of course, the problem in Australia is finding commercial eBooks legally, due to copyright restrictions. One place you can try is Dymocks, which has been the biggest Australian supporter of the format hitherto. Also, there's a huge variety of free, out-of-copyright titles available (ie. Austen, Dickens etc. — any of the 'ye olde classics').



If you can find legal eBooks in Australia, you don't need an eReader, just use your iPhone.

Free > **Lexcycle** > **www.lexcycle.com**



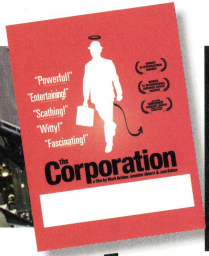
41 BitTorrent heaven
42 Using BitTorrent
44 Fine-tuning BitTorrent
46 TV catchup sites
48 Free general streaming sites
48 Free libraries
50 How to play back videos on the Xbox 360
52 How to play back videos on the PlayStation 3
54 How to play back videos on your PC
56 Windows Media Center
62 NAS & home servers

DOWNLOAD SECRETS

The internet is full of videos. You just need the right knowledge, tools and addresses to find them.

When you hear the word BitTorrent, chances are you'll think illegal downloads, pirates, court action. It's a pity, because while BitTorrents, video downloaders and proxy services have become the tools of content pirates, they are also the very same tools you use to find and download legal content safely. In fact, they are the tools that make you a 21st century media consumer, who is able to find any number of high-quality videos and other multimedia files on the net and play them on home theatre systems. In this guide, we'll use the tools used by download pirates to find, download and then view some of the best free content on the web.





BitTorrent heaven!

It's not all porn and illegal downloads.

The most spectacularly effective way of finding movies, music and other multimedia files on the internet is to use BitTorrent. Yes, this protocol is widely used for illegal downloads — but the arrival of affordable high-definition cameras means that there is more high-quality, free legal content available.

BitTorrent is also used to distribute public domain software and movie trailers as well as open source (GNU) movies and Linux distros.

Let's say you want to download a copy of *The Corporation*, a movie made available as a legal torrent by its makers. To use the BitTorrent system, you will need:

1 A broadband internet connection with a high data transfer quota, as a single movie can be several hundred MB in size (even more if high definition).

2 Software that allows you to download files (a BitTorrent client), such as uTorrent or Vuze.

3 A torrent site. These are sites that maintain indexes of torrents. Torrents are small files which track which users' computers have the files you want. So torrent sites don't have any content; they just point to the computers that have it. When you download a file using BitTorrent, it's being gathered bit by bit from several peers and reassembled on your computer.

With the tougher campaigns from anti-piracy bodies, some of the sites that used to provide illegal content are now offering legal videos for download.

One of them is Mininova, which offers legal content from users who want a global distribution network for their movies and music. Using Mininova is a fantastic way to learn how BitTorrent works, because until a few months ago, it was one of biggest pirates sites. Everything still works the same, but the content is now legal.

Many other torrent site still point to copyrighted material, but bear in mind that these dubious sites are not the safest places to be on the internet, as they may contain malicious code that can inject spyware or Trojans into your system. Whilst good antivirus software may offer some protection, the best defence is to only obtain your torrents from legal sources and legitimate torrent lists.

HOW IT WORKS

The BitTorrent system works well with very large files, because it breaks them up into small chunks and distributes the load of transferring files amongst peers. This means that popular files that are spread out amongst many peers will transfer quickly because each peer sends their parts of the file simultaneously. You also contribute by distributing parts of the file you have to other peers, which means you may upload even more than you download. If you are metered for both uploads and downloads this could use up your quota very quickly.

LEGAL BIT TORRENT SITES

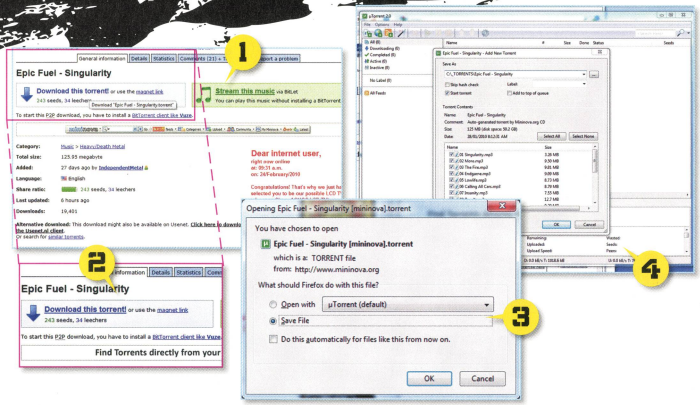
1. MININOVA.ORG
2. LEGALTORRENTS.COM
3. PUBLICDOMAINTORRENTS.COM
4. LEGITTORRENTS.INFO
5. YOUTORRENT.COM
6. ETREE.ORG

LEGAL SITUATION

Many people use BitTorrent to download copyright movies and TV shows — and this is definitely not legal. If you are caught downloading movies and other copyright material and charges are laid, it will cost you many thousands of dollars in legal fees (before you go to court). If you are found guilty you risk tens of thousands of dollars in fines as well a possible jail sentence. If the copyright owner then decides to sue you, there could be even more legal fees and damages awarded against you. This is definitely 'lose your house' type legal action!

That being said, many people still take the risk and as a result you can find incredible amounts of copyright material such as new release movies, television shows (including many that haven't screened in Australia yet), bootleg concerts, music and illegal versions of popular software for PC and game consoles.

Also remember that copyright holders can monitor these sites to obtain the IP addresses of people conducting searches and could use this evidence to launch legal action against illegal file sharers. Whilst we understand ISPs are not obliged to disclose who is logged onto a specific IP address, the law in this area may change.



Using BitTorrent

Using a torrent site is straightforward.

1 Simply go to a torrent search engine (such as **www.mininova.org**) which hosts content distribution services and enter the content you are searching for in the search bar.

2 If the content is available you will be prompted to download the torrent file (the traditional approach) or using some of the new trackerless technologies such as Magnet, DHT or PEX, which use peer to peer technology to locate other peers rather than relying on a central tracker server.

3 The torrent file should automatically open in µTorrent and the software will attempt to locate the tracker or peers and commence downloading the file. Be patient as it can take several hours or even days to download large files, particularly if there are only a few peers with the file.

Whilst files from content distribution services should be safe, it is a good idea nevertheless to check the file with antivirus and antispyware software to make sure it hasn't been tampered with or you haven't inadvertently downloaded a Trojan with a similar name. Avoid illegal content as that is at greater risk of carrying a nasty payload of spyware or a virus.

UTORRENT

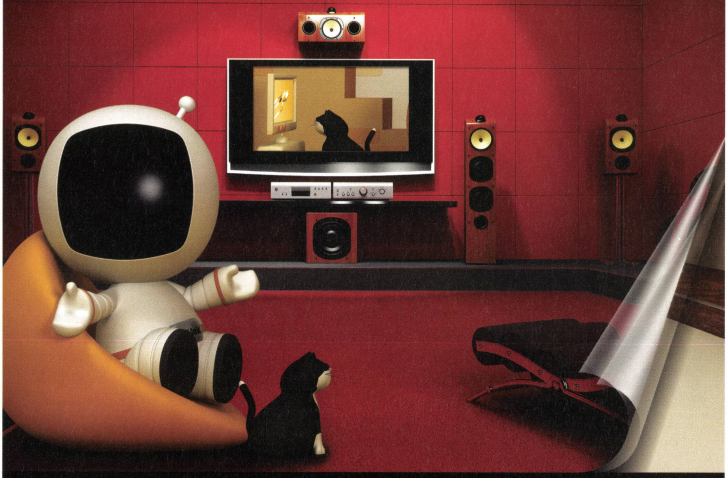
One of the best BitTorrent clients is µTorrent which is completely free (no adware or spyware) and can be downloaded from *www.utorrent.com* or *APC* DVD. A beta version is available for Mac users. We like µTorrent because it is small (311KB) and doesn't consume vast amounts of system resources. It even runs happily on a netbook! The only thing to be aware of is that by default it will install the Ask toolbar unless you intentionally uncheck the appropriate boxes during install.

4 Once downloaded you will need a compatible media player in order to be able to watch the movies. One of the better players available is VLC, which is open source, free and supports just about every codec (video file format) out there. You can download the latest Windows, Linux or Mac version of VLC from **www.videolan.org**.

5 Connect up your big screen TV to your secondary video output, configure VLC to use the secondary output for display and break out the popcorn. Hopefully everything will work properly, although we have experienced some issues with VLC using certain video cards and displays. Thankfully the VLC forums are an excellent source of information if you need help sorting out playback issues.

Win a Digital Home Makeover.

$50,000 prize pool up for grabs!



It's easy to enter!

Purchase any D-Link product(s) over the value of $150.00 from any Australian or NZ Retailer on the same invoice and visit **www.dlink.com.au/digitalmakeover** (conditions apply visit website)

Does your home need a digital makeover? We have a $50,000 prize pool available.

Each month D-Link will select 2 lucky entries (1 in Australia and 1 in NZ) based on your answer to the question, "Why do you think your home needs a digital makeover?"

Prizes would include LCD Digital TV, Home Theatre Surround Speakers, Notebooks, Media Streamers, Wireless Routers, IP Cameras and much more. ALSO someone from D-Link will come out and get your network running **ALL FOR FREE...**

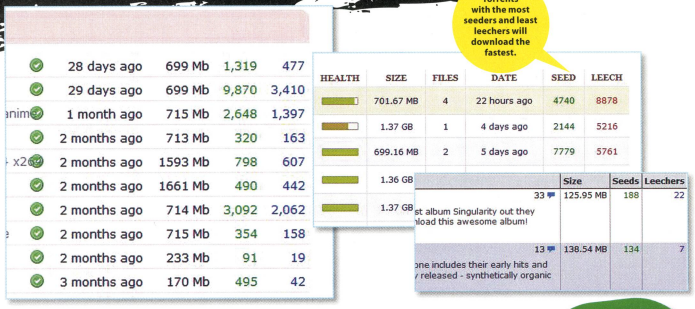
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Secret tips for faster torrents

BitTorrent files can range from a few hundred megabytes to dozens of gigabytes each, so maximising your download speed is critical.

You've gone to a legal BitTorrent site, searched for a torrent and got a search result showing several examples of the same torrent. At this point, you want to pick the one that will download the fastest,so the first thing to look at is the information alongside the torrent, which may show the size, number and upload date of the files in the torrent, and the number of seeders and leechers. The last two are the most important. The seeders are users who have a complete copy of the file for others to download and the leechers are users who are currently downloading it and have portions of it for others to download as well (in the BitTorrent protocol, once you start downloading bits of a file, other users — known as peers — can start downloading those bits from you!).

The theory (and genius) of BitTorrent holds that the more popular the file, the faster it will download. Why? Because with more people downloading it, each file also has more people (peers) uploading it.But more important than total number of seeders and leechers (known as the swarm) is the ratio of seeders to leechers. Torrents with the most seeders and least leechers will download the fastest — primarily because seeders have their entire bandwidth devoted to uploading the files, whereas leechers are both uploading and downloading. So in theory, a torrent whose swarm contains 20% seeders and 80% leechers will download slower than one in which there are 40% seeders and 60% leechers.

IDEAL NUMBER OF TORRENT DOWNLOADS

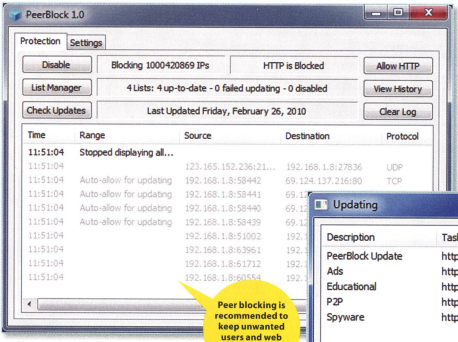
It's tempting to open up dozens of torrent downloads in a torrent client and leave them downloading for the next few hours. But too many torrents means all open connections and requests will max out your bandwidth and not be serviced properly. The ideal number of concurrent downloads depends on your speed. Clients such as uTorrent feature a speed test which recommends the ideal number, but there are also a number of BitTorrent calculators that will work out the ideal number of simultaneous downloads you should make for your speed. A popular one is at **http://infinite-source.de/az/az-calc.html**.

CAP YOUR SPEED

A BitTorrent connection has a channel for uploads and downloads. When you start downloading a file, the BitTorrent protocol takes it from a seed (another user on the network who has a full copy of the file), but as you download portions of it, it lets users like you (peers) start downloading parts of it. It's best to tweak your upload/download ratio so that your upload speed is about 80% of total bandwidth.

PRIVATE TRACKERS

Torrent sites come in public and private (membership only) versions. The public trackers have to service massive numbers of users and will have high leechers to seeders ratios (since many leechers limit uploads). On the other hand, private trackers monitor the upload/download ratios of their members and are more likely to disable the accounts of



Peer blocking is recommended to keep unwanted users and web sites out of your PC.

Peerblock can have its list of bad IP addresses updated via the I-blocklist available online.

PEER BLOCKING

A program that that prevents snoopers is Peerblock (*www.peerblock.com*), which blocks transfer between your computer and "known" bad IP addresses (such as those organisations mentioned below). The lists are regularly updated by the user community with additional bad IP address lists available from I-blocklist at iblocklist.com. Even if you are 100% within the law, it is wise to install and run Peerblock just to be safe.

USENET

An alternative to BitTorrent is Usenet. It has just as much as content and is even faster. But it's not as user-friendly, so it's remained the preserve of uber geeks, plus you have to pay for access to it. Since Usenet is not a peer-to-peer network in which other users host the content, you have to pay a Usenet provider who hosts the files. And because the providers don't want to go broke, they also set download limits each month.

Examples are GigaNews and NewsDemon. Once you've signed up, you download a client like Alt.Binz or SABnzb, add the provider's details and you're in the Usenet universe. Compared to BitTorrent, Usenet users are harder to track because there is a direct connection from your computer to the Usenet servers. The downloads are also faster.

leechers with reduced upload ratios. Private trackers also tend to get the newest content faster, since quality and speed of availability is a differentiator. Private trackers require you to be a member by invitation only. So you need to know someone else who is a member and can vouch for you.

PRIVACY

It's a fairly simple process for third parties to capture the IP of your computer if you are downloading BitTorrents — so why don't copyright holders have the name of anyone who has ever downloaded a pirated movie?

Because many download pirates use a variety of tools to hide the IP address or block snoopers. These are not a bad idea for legal downloaders either. Many people prefer not to share their legitimate online activities with government, organisations who actively discourage peer-to-peer file sharing and various other "net police." If you are transferring legal content there is still the risk of incorrectly getting labelled as an illegal file sharer.

ANONYMISER SERVICES

Many privacy services hide your IP address by channelling your surfing through VPNs (Virtual Private Networks that link you to their own servers) but many don't allow peer-to-peer downloading. One that does is TorrentPrivacy, which establishes an anonymous and secure encrypted SSH tunnel from your PC to its various servers around the world and makes your browsing invisible even to your ISP. Such is the demand for services like TorrentPrivacy that you need to pay for the good ones. TorrentPrivacy costs US$99.95 a year (or US$9.95 a month). 'Itshidden' is a similar service and offers a free version that works only in 20-minute blocks but gives you a sense of how it all works. This one works by getting you to set up a VPN by configuring Windows itself.

PRIVATE TRACKERS (AGAIN)

Private trackers are also good for ensuring privacy — they are far less likely to carry malware or have snoops. The internet is full of tips on how to get invites to private trackers, but in short, unless you know someone who can send you an invite, you need to look for private trackers having open signups (when launching or when their memberships drop), do "interviews" with the sites or hang around relevant forums and make yourself known enough to get an invite. Some sites show private tracker sites with open signups.



TV catchup sites

Aside from BitTorrent, there's a legal way to access all the latest TV.

The iView web site at **www.abc.net.au/iview/** allows you to catch up on shows that you may have missed on ABC television. In order to use iView you will need a fast stable broadband connection (ideally able to stream around 1.1Mbit/s). One of the best features of iView is that some ISPs, currently AARNet, Adam Internet, Apex Internet (TransACT customers only), Cinenet, Comcen/SPIN, iiNet, Internode, iPrimus and Westnet have peering arrangements that means that the content is unmetered so viewing shows does not count towards your download quota. Other ISPs, however, do meter the content, so you will need a reasonably high download quota if you use this service.

Channel 9/Win, Ten, SBS and Channel 7/Prime offer similar services on their respective web sites NineMSN portal (**video.ninemsn.com.au**), **www.ten.com.au**, **www.sbs.com.au** and Yahoo!7 Plus 7 (**au.tv.yahoo.com/plus7**). These sites let you catch up on TV shows as well as providing extra content that complements television programs. You will need to sit through advertisements but it is a legal way of viewing shows that you missed.

The limitation is that all of these services use embedded Flash, which means that you can only watch the content on your computer and cannot download it to your hard disk if your connection is not up to speed. iView and SBS give you the option to view full screen but the commercial offerings mainly play in a small window amongst the banner ads. Like their overseas counterparts, content viewing is restricted to people in Australia, so if you are travelling overseas and still want to catch up on your favourite programs, you will need a VPN connection back to an Australian IP address in order to watch the content.

OVERSEAS TV CATCHUP SITES

While the ABC leads the way with iView, the video quality of the content is nothing like that of some sites overseas. The BBC's iPlayer shows not only every program on TV, but at a much higher quality. It's a similar story with TV catchup sites such as Hulu, the portal for NBC, ABC (**abc.go.com**), CBS and Fox. But the trouble is that most of these sites can only be used by people in the US or UK for the BBC due to copyright and licensing restrictions.

If you go to one of these, you will be told the content is not available to you. Do you think this stops download pirates? Of course not. They have various ways of bypassing the restrictions. They use proxy servers or VPN tunnels to catch up on their favourite TV shows, making their computers appear as if they are in the US rather than Australia.

PROXY SERVERS

Proxy servers are computers set up to literally "pass the parcel"; in other words you request a web site (or TV show) and the proxy server in the relevant country outside Australia requests the web page on your behalf using its own IP address. In theory all you need to do is find a proxy server in the US, request the content from the overseas media site and the proxy server will stream the content to your PC.

In practice, this will not work, as most proxy servers do not handle Flash (the software that



The advantage of catchup sites is that they're legal — that doesn't mean they're without catches, however.

displays movies) which means you can access the overseas web site, but not actually watch the movie. Even if you find a Flash-enabled proxy, chances are that it will be blocked by the overseas sites in order to prevent them breaching their licence conditions by permitted content to be streamed overseas. Finally, going through a proxy is often far too slow for streaming media. If you want to try your luck with a proxy server, you can visit **www.publicproxyservers.com** for an up-to-date list of public proxy servers.

Paid proxy servers may be a little better but we were not prepared to hand over our credit card to unknown organisations. If you are prepare to take the risk, you will probably be disappointed, as the proxy is likely to have been blocked by the content proprietors and is unlikely to perform much better than the free public alternatives.

PRIVATE VPN CONNECTIONS

Whilst no means guaranteed, the most reliable way of accessing these sites is to set up a private VPN (virtual private network) connection to someone located in the US (or UK). To do this you will need someone in the US who will let you access their network and be prepared to load VPN software on their server. You can then connect to their network using the VPN client and browse the net from their IP. For all intents and purposes you will have a real US IP address that will work. There are no proxy servers involved, so provided the connection speed is fast enough you should be able to tunnel content down the VPN connection as if you were back home.

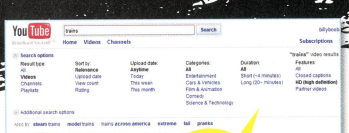
PUBLIC VPN CONNECTIONS

If you don't have access to a US network, you could try some of the public VPN providers on the internet. Hotspot Shield offers free public VPN services in return for you watching their pop-up advertisements and being able to monitor your browsing habits. Simply download the Hotspot VPN client, allow it to install and connect to the Hotspot VPN server in the US.

We tested Hotspot Shield and found it was hit and miss, as content providers such as Hulu would regularly block the known Hotspot IP addresses. However, if you manage to connect to a server that Hulu (or other content providers) aren't aware of and if your internet connection is fast (and reliable) enough, standard-definition content streams beautifully although "high" definition (480p) tends to be jerky. If you are unsuccessful, you can always try to reconnect in the hope that you'll get lucky with an unknown US VPN server.

PAID VPN SERVICES

Another option is to subscribe to a paid VPN service. This means you aren't annoyed by pop-up ads and probably will obtain better connection speeds, but you have to be comfortable handing over payment details (credit card or PayPal) to an organisation. There is still no guarantee that IP addresses won't be blocked by content sites; however, the chances of being blocked are less likely.





Free general streaming sites

YouTube now gives you the ability to search in high definition.

We all know about YouTube — and its grainy clips. The most exciting development is that YouTube is now accepting HD videos and they are starting to appear in big numbers on the service. You can now search for HD-only video, which if watched on TV or projected on a big screen look spectacular. The spread of affordable HD camcorders and cameras with HD movie capability means you can now view or download content that no longer looks like rubbish on a big screen. YouTube has also introduced **youtube.com/xl** a version of the service designed to be viewed on big TV screens.

Other YouTube-like video streaming sites include Veoh (which includes free TV shows, provided you are using a US IP address), Megavideo, Supernovatube and even Google video, where, by searching for videos longer than 20 minutes via the advanced search, you can find lots of movies and documentaries!

Go to **apcmag.com/hd** for a list of spectacular HD content on YouTube.

YouTube DOWNLOADERS

If your internet connection is not up to speed (for example, wireless broadband or some budget plans), the picture and sound will pause whilst the clip buffers. This can be annoying, so there are free tools to prevent this. One is Download Helper (available from **www.downloadhelper.net**). It's a Firefox browser extension that allows you to download YouTube clips to your hard drive where you can watch them using VLC media player or another Flash-enabled player, such as FLV player. But it's not the only one. There are many others, for Firefox, Chrome and IE.

Free libraries

It might not be the latest and greatest, but there's a lot of free content online.

You may not be able to download the latest television series or full-length Hollywood movies, but there are enough video clips around to suit all tastes.

Whilst you won't find any (modern) Hollywood blockbusters here, there are many hours of historical movies and cartoons, arthouse films and home movies available on free video libraries on the web.

The Internet Archive (**www.archive.org**) contains thousands of hours of classic cartoons (that Baby Boomers and Gen-X grew up with), vintage televisions, experimental cinema, foreign language films, arthouse collections and video mashups that can be viewed online or downloaded in a variety of formats including MPEG-2 (for burning directly to DVD), OGG, MPEG-4 (for watching on iPhones, iPod touch and mobile phones) and DivX.

Being a free and open archive, there are no DRM restrictions and you can be assured the content is free from viruses and spyware.

If you are after more Australian content, you can visit the online video archives at the Australian Centre for the Moving Image (**www.acmi.net.au**) or go back in time to view classic Australian films at **www.filmpreservation.org**.



WATCHING VIDEO THROUGH YOUR TV !

Internet videos are coming directly to TVs. Several IPTV channels will display directly on selected new 2010 model Sony Bravia TVs. These include Billabong, Wired, Golflink, eHow, Epicurious, Blip and Style.com. Other sites include Videojug (great and not-so-great how tos), wwiTV (live TV, mainly foreign language or special interest), justin.tv (a mix of live TV and clips) and AustraliaLiveTV (advertiser-produced programming).

QNAP is "READY", Are you ready?

The Turbo NAS is certified as compatible with VMware's vSphere4 (ESX 4.0) virtualization platform. The NAS can be utilized as the networked shared storage of VMware virtualization environments and Windows cluster servers. Comparing with traditional SAN (Storage Area Network), the Turbo NAS is a competitive alternative with much lower setup and maintenance costs in an IP SAN.

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How to play back videos on the Xbox 360

Nick Race shows how to stream videos from your PC to a TV using the Xbox.



Just as in the PlayStation 3 tutorials, the Xbox 360 is capable of playing back media served by a DLNA server running on a PC and letting you view it on the attached TV. In this case, we can use a very simple method, with no additional software from a Windows PC, but we've also put together a method using a third party DLNA server with more functionality and support for Mac and Linux.

The first method involves serving media from a Windows Media Player (versions 11 and 12) library. Windows Media Player 11 works with both Windows XP and Windows Vista, while WMP 12 is for Windows 7 only. The method is the same in both versions.

To get started, we first need to import our video files into WMP's library — we can't just serve them from a directory, which may be a deal breaker for some. WMP will automatically add any files in the My Videos or Videos library in Vista or Windows 7 respectively; so if your videos already live there, there's nothing more to do.

1 In case they are stored elsewhere on your PC, you can add the directory in which they are contained to the WMP by opening up Windows Media Player, then clicking on Now Playing in WMP11 or Play in WMP12. Click on Organise, then select Manage Libraries and Videos. This will show a list of folders that WMP monitors for video content. Click on Add, select the folder that contains your videos, then click Include Folder. Now WMP knows the location of your video files. Next, close the Videos Library Location screen and click on the Library side bar on the left-hand side of the Play or Now Playing screen under videos. Check that the videos from your collection are being shown.

2 Now, to enable streaming of these video files for the Xbox (and any Media Extenders on your network), in WMP12 click on the Stream drop-down menu and select Turn on Media Streaming.

3 It will turn on the Media Streaming Options screen in Control Panel. Click on the Turn on Media Streaming button.

4 In the next screen name the media library — in this case we're calling it notebook, as it's running from one of the notebooks in our Labs. If you're running multiple PCs in the house, then each can act as a server, so you want them to be uniquely named to avoid confusion. Underneath will be shown the list of devices on your network that you can stream to. Make sure your Xbox 360 is on the list and its drop-down box is set to Allow. If there are other PCs on your network you don't want to share media with, set them to Blocked.

5 Next, jump over to your Xbox 360. In the Home screen, go to the Video Library tab. (Not the Media Center tab). Activate it, and in the list will be the name of the PC serving the video. Press down on the controller until it's selected, hit the green button, then a list of the media being served to the Xbox will be shown. Choose the video you want to watch and voila!

6 You may be prompted to connect to Xbox Live and download a small update. It will only take a moment — and allows the Xbox to play back DivX content.

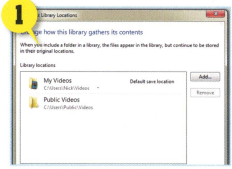
WHAT YOU'LL NEED

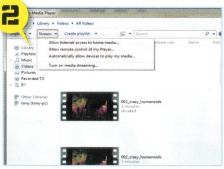
A WINDOWS PC
With Windows Media Player 11 or 12 installed

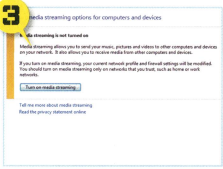
XBOX 360
On which to play your video

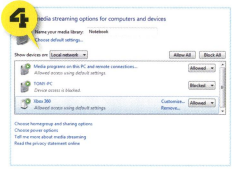
TVMOBILI
From www.tvmobili.com

How to **play the downloads**

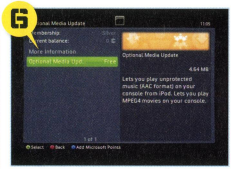






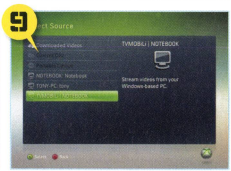












STREAMING WITH TVMOBILI

TVMOBiLi, like TVersity used in the PS3 How To, is a DLNA UPnP server that can serve video content to any DLNA UPnP device (including the Xbox 360 and PlayStation 3). It doesn't support transcoding the video files though; if that's what you need, then consider using TVersity from the PS3 How To — the process is exactly the same.

First, download TVMOBiLi from the web site **www.tvmobili.com**. It's available for Windows, Mac OS X and Linux, but we're concentrating on Windows here today. Run the downloaded installer file — it's simple, with no options (and nothing to get wrong. . .).

7 Once it's installed, it will open up your web browser and show the basic Home screen, which will allow you to browse content once we've added it.

8 Click on the Settings link on the top right of the page, which will bring you to a very simple setup screen. All we need to do here is to enter the folder in which our videos are stored. In our case, it's C:\Video, so we click on Browse, select the directory and hit OK. Enter a description if you need to, something like "My Video Collection", and hit the Submit button.

Under My Directories, it will show the added collection of videos with the description you entered. You can now close the web browser.

The next step involves opening ports in the Windows firewall to allow the Xbox to connect to the TVMOBiLi server. Open Control Panel on your PC, then select Windows Firewall. Select Advanced Settings and you'll be presented with a new window containing the overview of your firewall settings. Click on Inbound Rules on the left-hand column, then New Rule in the right-hand column. A wizard will pop up, asking for what type of rule we're creating. Make sure "Port" is selected, then click Next. In the next screen make sure TCP is selected, then underneath in the Specific Local Ports box, enter 30888, which is the port TVMOBiLi uses to serve content.

Click Next, select "Allow the Connection" and click Next again. Untick the Public Box (for Windows Vista and Windows 7 users), as we don't want any ports open when we're on an unsecured network. Click Next, and name the profile; something like TVMOBiLi-UDP is acceptable. Click finish, and we're done. Close the Firewall screen and Control Panel, and skip across to your Xbox.

9 In the My Xbox tab, open the Video Library tab with the green button. In the list you should see an entry for TVMOBiLi [your PC name]. Select that entry and navigate through to your videos. And it's done!

How to play back videos on the Sony PS3

Nick Race shows how to stream videos from your PC to a TV using the PS3.

Playing downloaded files on your PS3 is not as straightforward as it could be. Considering the processing power and internal storage on the PS3, it should be trivial to allow video decoding and playback on it of all kinds of formats. Alas we have to make do by streaming content over a network using a server. The two options here are TVersity and PS3 Media Server. PS3 Media Server is recognised as having wider file format support and is a bit snappier to use, while TVersity is a more polished product. We'll cover both and let you make your own decision.

WHAT YOU'LL NEED

A PLAYSTATION 3
To stream media to

A WINDOWS PC
To stream media from (Windows 7, Vista or XP)

PS3 MEDIA SERVER
http://ps3mediaserver.blogspot.com
OR TVersity Free
www.tversity.com



STREAMING WITH PS3 MEDIA SERVER

PS3 Media Server is a basic, brass tacks software package for playback to PS3 consoles over a network. It has the ability to transcode video formats the PS3 doesn't undersand natively, and can run as a Windows service in the background. It's stable, powerful, but a bit daunting when you first start it up.

To begin, we need to download and install the software package for our PC. PS3 Media Server supports Windows (including Windows 7), Mac OS X and Linux, but we'll only be looking at Windows for this tut. The files are available to download from **http://code.google.com/p/ps3mediaserver/downloads/list**.

Run the installer, with all default options. It's important to install the app as Admin, as we'll be setting it as a service later on. If you do not have Java Runtime 6 installed, the installer will download and prompt you to install it before the process can finish.

1 Start the software from the final install screen and, provided your PS3 is connected to your network, we'll see the following screen (above right).

Considering that 99% of the time we won't need to adjust any advanced settings, our first port of call is the General Configuration tab, across the top of the screen. You have a choice to make here. We are able to install this software as a service, in which case Windows will automatically start it when Windows starts and we won't have any interaction with it; if the PC is on, it's running. The other option is to run the software manually: just double-click the software's icon from the desktop or start menu and we're off and running.

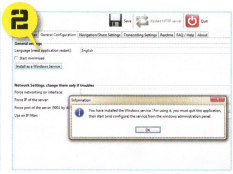
2 To install PS3 Media Server as a service, in the General Configuration tab, click Install as a Windows Service button. The following dialog box will appear. Close the box — we'll come back to that later. The only other configuration we need to do at this point is to provide the PS3 Media Server with a video library to serve. Without doing this, it offers all your hard disk drives to the PS3, which can be a security risk (and an invasion of privacy).

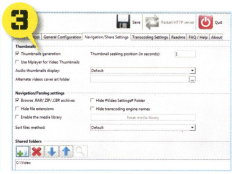
3 Click on the Navigation/Share Settings tab across the top of the screen. At the bottom of the next screen, under the Shared Folders heading, click on the icon of a green cross and folder. This will bring up a navigation dialog, so go ahead and select the directory in which you keep your video files. In this case, we've selected C:\Video.

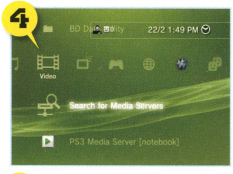
At the very top of the application, click the large floppy disk 'Save' icon, then click on Restart HTTP Server just to the right. This is enough configuration to see whether the PS3 can access the content from PS3 Media Server.

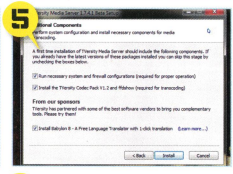
4 Over to the PS3, turn it on and navigate using the XMB (Cross Media

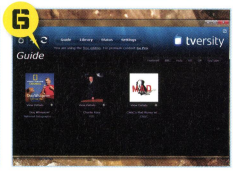


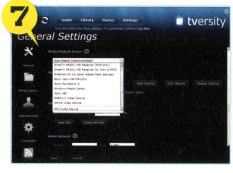


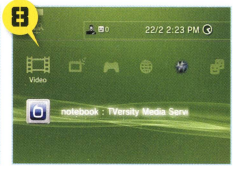


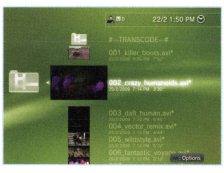












Bar) to the Video tab. Under this menu there should now be an entry for PS3 Media Server, then the name of the PC doing the serving in square brackets. Congratulations, you're serving media to your PS3!

For the advanced setup, we're going to run the application as a service when Windows starts. This means we don't have to remember to start PS3 Media Server every time we want to watch something using the PS3.

Navigate to Control Panel > Administrative Tools, then select Services. In the list that comes up, scroll down and find the entry for PS3 Media Server. Right-click on the PS3 Media Server entry and in the Startup Type drop-down box select Automatic. Hit OK, close the Services screen and we're done! PS3 Media Server will now start in the background every time Windows boots. Completely hands off.

MEDIA STREAMING WITH TVERSITY

TVersity adds in a lot of functionality that, frankly, isn't that useful in Australia. It's Pro features (for the paid version of TVersity) is built around internet streaming of BBC, Hulu etc, which aren't available for Australian users. The Free version gives the same functionality as PS3 Media Server, with a bit more spit and polish. Anecdotally, it has more issues with transcoding, but we do not have hard evidence to support that. Both can be installed and used, so feel free to experiment with both!

5 Download the TVersity free version from **www.tversity.com**. Click through the install process (and choose whether to install the Ask.com toolbar or not) then ensure that the options to Run the Necessary system and firewall configurations [and the Codec pack and ffdshow] are both selected. Choose whether to install the "sponsorware", and finish the installation.

6 Once it's done, we can open up TVersity to the main screen.

7 From here, click on the Library tab at the top of the screen, and then click on File System under the Sources heading on the left-hand side. Select "Folders" and click the Add Item icon at the top centre of the screen.

This will bring up the Add Media screen, where we can select the directory on the PC that contains our video files. The easiest way is to click on Browse at the bottom right of the menu screen, and navigate to the directory in which you store your video. Click OK, then Click on Submit. TVersity will now churn through the video files and add them to its library. Once that is finished, feel free to close TVersity, which will continue to run in the background.

8 Head on over to your PS3, and under the Video [and audio and photo] Tabs on the XMB, you'll see the Tversity icon.

Select it, choose the file to play and you're off and watching. TVersity will serve any video files you put in the directory you chose to add to the library.

How to play back videos on a PC

Playing video files correctly is not always as simple as a double-click. **Nick Race** shows you how.

The many different encoding formats and container files that abound on the net means you'll often have to chase down a codec or two to get things working as they should.

We'll start from scratch, assuming you've got an untouched installation of Windows Vista, XP or Windows 7, and some files to play in different formats. You're most likely to see the following file types when playing back downloaded movies: AVI, MKV, MOV and MPG.

These are video container files, which contain the video, audio, subtitle and sometimes image files that make up the video you watch. Though the extension gives you a hint as to what you need to decode the files, it's not always obvious. The actual codec used in the file types above can be anything from DivX to XviD, H.264, to plain MPEG-2 and rare HD codecs and open source competitors.

Though your media playback software can open the container files, it doesn't always know what to do with the video files inside it. Sometimes, it can open the video, but doesn't know how to play the audio.

To fix this we need codecs. Codecs allow us to decode the audio and video so we can watch it on the PC. Thankfully, many codecs are related or derivative, so we can use one to decode others.

What we'll do to enable playback of as many file formats as possible is install a number of different codecs, which Windows will automatically use to decode video and audio when required. This is a shotgun approach, and lets us stop worrying if we're able to play something and just sit back and watch it.

A huge chunk of our decoding requirements can be taken out with a single download: ffdshow Tryout. This is an open source, free collection of video and audio codecs, and it supports our big three: XviD, DivX and H.264, plus AAC audio, DTS and all kinds of audio streams included with online videos.

Thankfully, this version of ffdshow runs with a good selection of default options to get us up and running right away. Download the file from the SourceForge repository at **http://ffdshow-tryout.sourceforge.net/**. Once you have the downloaded file, double-click to run it. Its installer is just like every other software installer; choose an install location (we always go with the default). Next it will ask you about components to install. Just make sure VFW Interface is selected, which will allow Windows to interface with ffdshow.

The other options have to do with encoding video using specific video processing applications, and aren't applicable here.

Next you'll be asked to Select Additional Tasks. This is the screen where we associate the video types that ffdshow Tryouts can decode. You should just leave these options as they are; it will cover the main types of files we're trying to watch.

Next, choose your speaker setup; this allows ffdshow to configure itself for the correct audio output for your system. In this case we're installing on a notebook, so stereo speakers are applicable.

When you complete the setup wizard, there's no need to select to run the configurations, we've just done the basic configuration in the setup. The codecs will work in most video players, including Windows Media Player. If there's a file you just cannot watch using this method, download and try to play the file in VideoLan Client (VLC), a free, open source playback app with support for oodles of video and audio codecs, from **www.videolan.org**.

WHAT YOU'LL NEED

A WINDOWS PC
This method is for Windows XP, Windows Vista and Windows 7.

FFDSHOW TRYOUT
Available from *ffdshow-tryout.sourceforge.net*.

Seagate FreeAgent Theater + HD



The easiest way to move and enjoy your photos, movies and music from your PC or Mac to your TV.

The FreeAgent Theater+™ HD media player provides an easy way to store and move your photos, movies and music from your PC or Mac® computer to your TV, allowing you to share and enjoy your digital media right in your living room.

The FreeAgent Theater+ HD media player solution consists of two components

- **An HD media player, and**
- **FreeAgent Go™ portable hard drive.**

With two easy steps, you will be viewing and sharing your favorite photos, movies and music in no time:-

- **From your home computer, use the included sync software to automatically copy all of your media files to the FreeAgent Go drive, or simply drag-and-drop files directly to the drive.**
- **Dock the FreeAgent Go drive into the FreeAgent Theater+ HD media player, connected to the TV**

FreeAgent puts your entire media library at your fingertips with 1080p high-definition playback and crystal clear surround sound audio.

With the front-mounted USB port, you can also plug your digital camera, digital camcorder, USB flash drive, or external USB hard drive directly into the FreeAgent Theater+ HD media player and enjoy the same high-quality viewing experience.

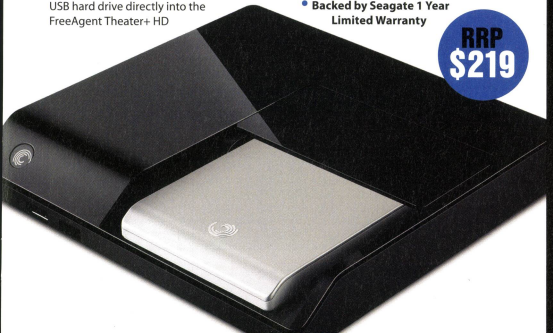
With the built-in Ethernet port the FreeAgent Theater+ HD media player can connect to your home network to access content from shared devices, including networked computers and NAS.

The network connection also allows the Theater+ HD media player to access internet content.

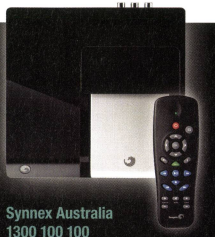
Browse your files with a familiar folder structure view, thumbnail view or filter by media type such as movies, pictures or music.

HIGHLIGHTS

- **HDMI connectivity and 1080p HD video playback.**
- **Dolby® Digital and DTS® audio support**
- **Ethernet connection for accessing shared content on your network.**
- **Unique docking system eliminates fumbling with cables and connections.**
- **Front-mounted USB port for additional storage devices.**
- **Includes sync software for PC and Mac®.**
- **Intuitive user interface with DVD-style navigation.**
- **Windows® XP, Vista®, Windows® 7, and Mac OS® X compatible.**
- **AV Cable, Ethernet Cable, component cable, Setup & user guides all included**
- **Backed by Seagate 1 Year Limited Warranty**



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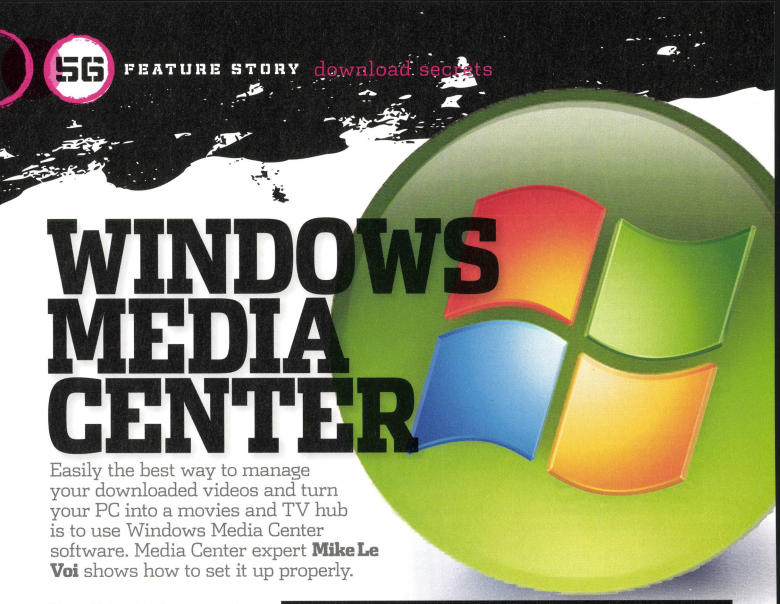
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FreeAgent Theater+

HD MEDIA PLAYER

WINDOWS MEDIA CENTER



Easily the best way to manage your downloaded videos and turn your PC into a movies and TV hub is to use Windows Media Center software. Media Center expert **Mike Le Voi** shows how to set it up properly.

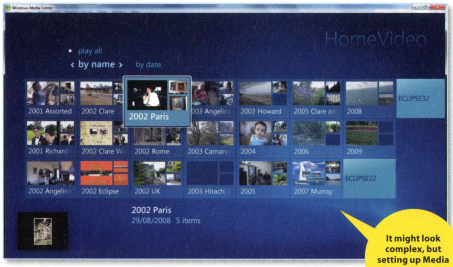
Why use Windows 7 Media Center when there are other programs like Windows Media Player and VLC for playing your music and videos? There are two major reasons. One, it supports TV tuners. These are now readily available as desktop cards or notebook USB sticks. The supplied TV tuner software is usually OK, but Windows 7 Media Center generally has more features. In addition, some supplied software does not work with Windows 7. The other reason is the "10 Foot Experience". It is not easy to use normal Windows programs sitting on a couch when the PC and LCD or plasma screen is 3 metres or more away. You need a User Interface where all the on-screen controls are larger than normal and preferably a remote control designed for this scenario.

THE 3 VERSIONS OF MEDIA CENTRE SO FAR

1 XP Media Center Edition (MCE). This version was not very popular as you could not add MCE support to Windows XP after purchasing XP Home or XP Professional. You either bought the version of Windows XP with Media Center, or you missed out. However, it was relatively stable, and since it was based on XP Professional you could use Remote Desktop to control it.

2 Vista Home Premium or Ultimate. A big improvement over the original MCE, but Vista Home Premium had no Remote Desktop support. Remote Desktop is almost essential for controlling and managing a PC that is on the other side of the room with no easy way to use a mouse and keyboard. Vista Business has Remote Desktop but, amazingly, no MCE support. You needed Vista Ultimate for Media Center and Remote Desktop. To manage Vista Home Premium you can use something like VNC for remote management, or a hack to enable Remote Desktop. The hack is to the Terminal Services DLL to allow access on Home Premium. You can find a version here: **www.forwardthinkingtech.com/2009/07/25/vista-home-premium-terminal-services-hack-sp2/**.

3 Windows 7 Home Premium or better. As with Vista, Home Premium does not have Remote Desktop. However, the Windows 7 pricing model means that it is probably better to simply get Windows 7 Professional, as that has XP Mode and other goodies for very little extra cash when bundled with a new PC.



It might look complex, but setting up Media Center isn't too hard.

Setup and optimisation

How to set up your media centre the right way.

Setup is quite straightforward. You use the setup options to define the monitor type, screen dimensions and the audio components. For TV reception, you simply setup the TV signal, scan for channels and then customise the TV Guide to match what channels you want to use or suppress.

With a USB TV stick, make sure that you first plug it in and install the driver in the order stated by the manufacturer. Also, do not move the USB TV stick from one USB port to another. Windows 7 is likely to detect this as a new and different TV tuner. Even worse, Media Center will think that the old hardware has disappeared and that new hardware has been added. This means that you will have to repeat the whole tedious process of scanning for channels and setting up the guide!

With XP and Vista, you needed registry hacks to control important features. For example, maximum pre-recording padding was 4 minutes, as was the maximum post-recording padding. Thank goodness Microsoft listened to user complaints as now you can set pre-padding up to 15 minutes and post-padding up to 30 minutes. In addition, when you click record in the Guide, you can use 'Actions > Advanced Record' and set a special post-padding amount for that early morning program which you know is not going to stop at the correct time.

With Windows 7, there is only one registry hack you probably still need to apply. Default TV and video skip amounts are 29 seconds forward and 7 seconds backwards. As fast forward and rewind do not work on almost all videos, you probably want to change this. I choose 2 minutes forward and 29 seconds backwards. This is sufficient to skip through most videos and to skip backwards when you go too far.

THE VALUES TO CHANGE ARE ALL IN:

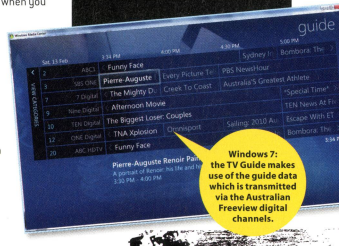
HKEY_CURRENT USER\Software\Microsoft\Windows\CurrentVersion\Media Center\Settings\VideoSettings

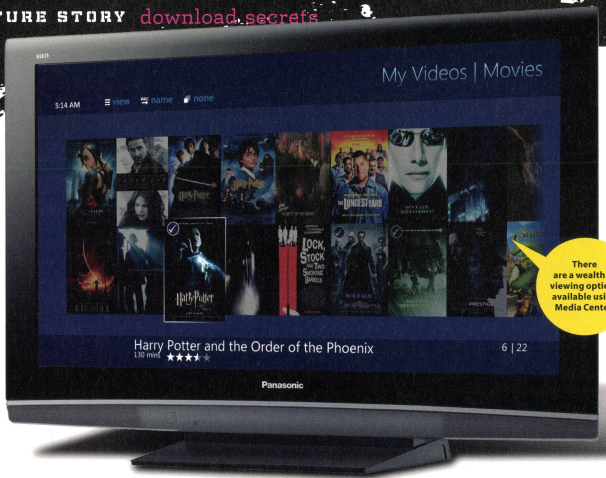
The registry keys are SkipAheadInterval and InstantReplayInterval. Edit these in decimal and set them to 120000 (120 seconds) and 29000 (29 seconds).

NEW IN WINDOWS MEDIA CENTER 7

Compared with the versions for XP and Vista, there are some great new features.

- **TV Guide.** The old versions of Media Center expect the TV guide to be supplied via the net. In the USA, this is commonplace. In Australia, however, the TV stations do not provide such a facility and we have to use software like IceTV or epgStream. In Windows 7, the TV Guide makes use of the guide data which is transmitted via the Australian Freeview digital channels. As with Vista, you can set up recording schedules for a week in advance either by scanning the guide manually or via search.
- **Built-in support for DVD and video libraries on hard disk.** This means that you can rip or convert all your home video DVDs to hard disk and just watch them when you want.
- **Far better video codec support in Windows 7.** Codecs (coder-decoder) are used to encode and play back the many types of video formats that you can find. With Vista, you needed many or varied codec packs. With Windows 7, the only major omission is MKV (a video container file type) and some H.264 (a recent video format) support. You can add this support with something like Shark007 Windows 7 codecs (*http://shark007.net/*) but we have chosen not to do this. For the odd MKV file, we use VLC.
- **Music features are similar to Vista.** The difference is that an all important Search facility has been added. It is better than nothing, but it is still a poor relation to that provided by Windows Media Player 11 or 12. For example, a search for "Beef viol conc" will yeild results in Media Player. The same search in Media Center says "No results were found".





Using Media Center to watch content

What's the easiest way of getting media onto disparate old and new PCs around the house? **Mike Le Voi** has figured it out.

If you have all the latest and greatest kit, you can use Media Center on your PC to stream media to other devices using such protocols as DLNA. However, many of us only have older PCs that simply get redeployed when new stuff arrives.

You can use media extenders like an Xbox 360 to stream TV (covered on page 60). However, in my case I have just opted to use dedicated TV tuners and watch the TV on the PCs.

OBTAINING THE TV CONTENT

USB TV tuners are cheap and work great as long as they are plugged into a TV antenna wall socket. The supplied aerials are not much use unless you live very close to a transmitter.

Also, having multiple TV tuners allows you to record multiple programs at once.

SHARING THE CONTENT

XP and Vista do not support Windows 7 homegroup networking. So, I simply share 3 "Read Only" folders: one for Pictures, one for Music and one for Video and recorded TV programs. The XP and Vista PCs connect to the required shares and play the content using Windows Media Player, VLC or Vista Media Center.

CONVERTING RECORDED TV

I often record late night TV programs on the Windows 7 desktop in the study. However, I normally want to watch the recorded program upstairs. This is not as easy as you would like.

XP and Vista record TV in DVR-MS format. Windows 7 records in a different format called WTV. XP will not play WTV files. Vista is supposed to be able to play WTV files, but my copy of Vista does not. Windows 7 plays both formats, of course.

Luckily, Windows 7 provides an easy way to convert WTV files to DVR-MS files. The simple way is to 'Right Click' the WTV file and choose the option 'Convert to .dvr-ms Format'. Alternatively, you can create a simple BAT file as follows:

```
@echo off
C:\Windows\ehome\wtvconverter.exe "C:\Users\Public\Recorded TV\*.wtv"
```



If you wish to automate the process, use Task Scheduler to create a task that wakes the PC at 6am and runs the BAT file. That way, any TV shows you have recorded overnight will be automatically converted to a format which can be played by XP and Vista.

Windows Media Player uses about 15-20% of the wireless G networking bandwidth to play a streamed DVR-MS file. If your wireless network connections are not reliable, you probably want to convert the files to MP4 format before attempting this.

You may want to "top and tail" the DVR-MS file before you convert it. The easiest way to do this is to use DVREdit, a simple to use editor — get it here:

http://jeffreygriffin.com/files/folders/dvr_ms_conversion/entry153.aspx.

If you do not like watching adverts, you can use Lifextender (**www.lifextender.com**) to automatically cut them out. There are many configuration options so be prepared to experiment.

Also, in my experience, automatic skipping of commercials does not always work. So, be prepared to convert the WTV file to DVR-MS again if you lose bits of the TV program that should not have been removed.

Finally, you can convert the DVR-MS file to MP4 format by using a utility like MCEBuddy (**http://mcebuddy.com/**). Unlike Lifextender, MCEBuddy works with WTV or DVR-MS files.

It is designed to run as a Windows Service and scan the contents of a directory and automatically convert any WTV and/or DVR-MS file that it finds. You define the available start and end times for conversion and the source and destination directories.

The resultant file is much smaller than the DVR-MS file. A 50-minute TV show will compress down to about 500MB. When played, only about 2-3% of the wireless networking bandwidth is used.

The final hurdle is actually playing the file. XP and Vista do not have native support for many codecs. So, you usually need to install a codec pack. I use the Vista Codec pack from Shark007 (**http://shark007.net/**) on the XP and Vista PCs. It is mostly stable and all files play fine using Windows Media Player and Vista Media Center. Again, for less common video formats like MKV, I use VLC.



Music options: because "media" doesn't just mean movies!

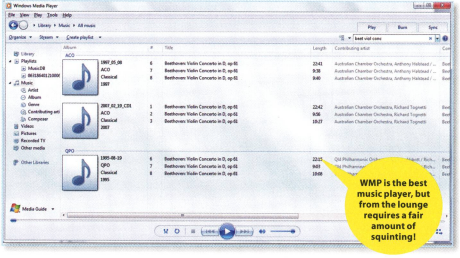


Depending on your version of Media Center, you may or may not have remote support.

Play music

For long-range music control, you can't beat 7's MC.

On any Windows platform, the easiest way to catalogue and play music is Windows Media Player. As previously discussed, Media Center is less than ideal for playing music as the search criteria are limited. If you do proper tagging, you can find what you want much more easily in Windows Media Player. However, for the "10 Foot Experience", Windows 7 Media Center wins as it allows a method of finding the album you want to play using simple searches and album covers. Windows 7 Media Center has some new great features compared with Vista. Add a cheap USB TV tuner and you will soon be enjoying TV, your movies and your music on your notebook or desktop. The only strange configuration in the above is the use of the MCE Remote with the XP Pro notebook. Windows Media Player 11 doesn't support most features of the remote. However, the Kaiser Baas USB TV tuner came with CyberLink PowerCinema for watching TV. This software supports many of the buttons on the MCE Remote Control: TV Guide, Live TV, channel, volume, mute and pause/play buttons. WMP 11 supports volume, mute and play/pause buttons so it is used for watching DVDs or movies or playing music.

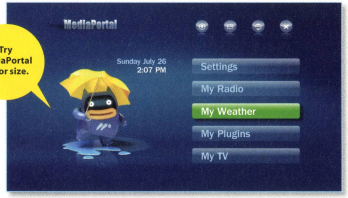


WMP is the best music player, but from the lounge requires a fair amount of squinting!

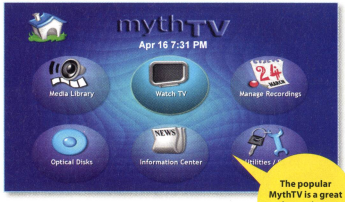
KEYBOARD SHORTCUTS

You will soon get fed up using the mouse to control Media Center. Here are the most important keyboard shortcuts for fast navigation:

Win Key + Alt + Enter	Main menu
Alt + F4	Exit
Alt + Enter	Flip flop window/full screen
Ctrl + T	Live TV
Ctrl + G	TV Guide
Ctrl + O	Recorded TV
Ctrl + M	Music
Ctrl + E	Video
Ctrl + I	Pictures
Ctrl + D	Show the "context" menu
Back	Backspace (Esc also works)
Mute	F8
Volume Up	F9
Volume Down	F10
TV Channel Up	Page Up
TV Channel Down	Page Down
Select TV channel	"n"
Ctrl + P	Pause/Play
Ctrl + F	Play next song (Skip forward video)
Ctrl + B	Play last song (Skip backward video)



Try MediaPortal on for size.



The popular MythTV is a great alternative to Media Center.

MC alternatives

These are more than capable of replacing Microsoft's costly software.

Media Center faces stiff competition these days thanks to freebie software like MythTV, MediaPortal, Boxee and XBMC. MythTV has been knocking around since 2002, and the software provides some good DVR support if you're building a PC for heavy-duty TV recording. Numerous add-on modules can add photo browsing, RSS feeds, Netflix integration and Slingbox-style placeshifting. MediaPortal is unashamedly Media Center-esque, but it has a limited appeal for TV PCs since it only runs on Windows.

XBMC is otherwise known as Xbox Media Center. What started out as a clever hack for Microsoft's games console has now evolved into an "open-source (GPL) software media player and entertainment hub for digital media". There are versions for Linux, OS X and Windows. Using **www.xbmc.org**'s own guide (**tinyurl.com/yz6rm3w**), you can easily specify a minimal Ubuntu install before you add the software. XBMC can handle a huge array of video files, and playback can be accelerated using the Ion hardware. Usefully, XBMC can either launch a compatible player or function with a VDPAU (Video Decode and Presentation API for Unix) modification to the software. It's all there in the XBMC wiki at **www.xbmc.org/wiki**.

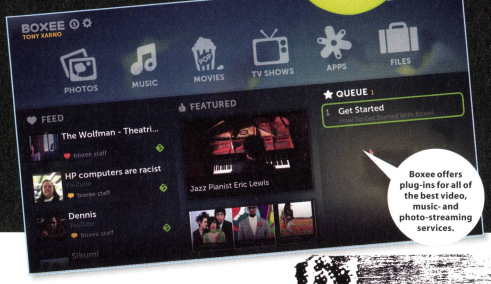
Out of the Boxee

A star among the alternatives.

Another Media Center alternative is Boxee. This freeware media centre solution was born out of the XBMC code base, and it brings a social-networking edge to things. Boxee does everything you expect — it catalogues photos, music and video on your PC's hard disk and makes them accessible via a sofa-friendly UI. If you've titled DVD rips correctly, Boxee will pull in the background blurb from IMDB.

Boxee apps take things a step further, plugging you directly into a variety of third-party video-streaming services. Log into your account on the *www.boxee.tv* web site and you can seek out people you know that are also using the software. Adding a friend to your list will show you what they've been watching or what they recommend.

Boxee is an ideal choice for an Ion-based TV PC, especially as the integrated media player supports hardware-assisted video decoding. Need a cutting-edge remote control to go with it? Type Boxee into the iTunes Store and you'll find a Boxee Remote app that lets you control your Boxee-powered TV PC with an iPhone or iPod Touch. And if you don't want a PC at all? At this year's CES, D-Link announced the first Boxee Box (*www.dlink.com/boxeebox*), a dedicated hardware solution that runs the software silently.



Boxee offers plug-ins for all of the best video, music- and photo-streaming services.

NAS & HOME SERVERS

Bennett Ring tests examples of hardware that can store masses of video and music files.

UNDER REVIEW



ASUS TS Mini



Thecus N2200 4TB


WD ShareSpace 4TB


Seagate NAS 440


NETGEAR Stora


HP MediaSmart Server EX490

WINDOWS HOME SERVER

Launched back in 2007, Windows Home Server is Microsoft's attempt to make home media servers easy enough for the average Joe Bloggs. It's actually based on Windows Server 2003 (with Service Pack 2), but uses a radically simplified interface. Home Server is also tailored to deliver better file sharing (both on the internal network and remote access), centralised backups and media streaming, hiding most of Server 2003's features that aren't related to these duties.

This OS has only started to take off in the NAS space in the last twelve months, and is usually found on more powerful devices utilising Intel Atom processors. We found NAS devices that used this OS to generally be easier to set up and run than those using proprietary software, as our existing Windows experience translated well to the Home Server interface. Bear in mind that it does contribute to a higher overall unit cost though, with an OEM version of the software currently priced at around $130.

Until the day arrives when we can upload our digital memories to cybernetic implants located in our carbon-fibre reinforced skulls, we're going to have to make do with storing our digital photos, movies and music somewhere on the home network.

Most folks tend to keep them on a single PC, sharing them out to the various PCs located throughout the home, but it's not the best way to ensure smooth media sharing when multiple users are all chasing their media fix at the same time.

It's also not the safest way to store your media files (especially photos); without regular resource-hogging backups, there's a real risk that your fondest memories will get wiped during a sky-cracking electrical storm.

As home networks started to buckle under the weight of heavy media-streaming demands, a corporate solution for file sharing became a great way for consumers to solve the problem. Enter the consumer NAS (Network Attached Storage), a dedicated machine on the network whose sole duty is to store and serve media files to today's ravenous media consumers.

Unlike corporate NAS, which only techies can comprehend, the home NAS has evolved to better serve the needs of normal human beings. They're easy to set up, with pretty GUIs that even your grandmother can understand (provided she knows how to use a mouse). They also offer dedicated media serving, with most boxes featuring built-in DLNA and iTunes servers to deliver a better streaming experience. Finally, they're cheap as chips, at half the cost of similar SOHO NAS devices.

At the same time, home servers have also started to become popular. These serve the exact same function as a NAS — backups, media streaming and remote access to files. However, they're built more like a regular PC, with today's home servers using an Intel Atom chip and running the Windows Home Server operating system. Because they utilise off-the-shelf PC hardware, they tend to be slightly more expensive than the smaller NAS devices, but offer a wider range of features.

We've taken a look at six of the most popular home NAS and home servers available today, focusing on features, affordability, ease of use and performance. Read on to see the best way to keep your files flowing across your home LAN reliably, while making sure your treasured memories don't disappear the next time your hard drive crashes.



- 2 X 3.5IN DRIVE BAYS
- 2 X SEAGATE BARRACUDA 7200.12 500GB DRIVES
- 6 X USB 2.0, 2 X ESATA
- WINDOWS HOME SERVER

$699

7/10

ASUS TS mini

@ www.asus.com.au

✔ Silent operation; Home Server is nice (when it works).

✖ Not enough internal drive bays; very expensive per GB.

Does Windows Home Server give it the competitive edge?

With its sleek piano black finish and silent operation the TS mini won't look out of place amongst your designer appliances.

Setting up the TS mini was easy enough, using an ASUS-tailored version of the Windows Home Server Console. Unfortunately we found this software to be a little unstable. Our first attempt to configure it using the Home Server connector worked wonderfully, but it didn't remain that way, with occasional crashes.

Our review sample shipped with two 500GB Seagate Barracuda 7200.12 hard drives, taking up both bays. Getting to the bays is fairly easy, although it does require the removal of the outside case, and three internal screws before sliding out the entire drive section.

An Intel Atom N280 with 1GB of DDR2 provides the grunt, residing on a custom ASUS motherboard which has excellent connectivity options. Six USB 2.0 ports are handy, but most impressive are the two eSATA ports, which help to overcome the shortage of internal drive bays. ASUS includes its own Xtor manager within the Home Server Console, making backing up and synching between the TS mini and external drives easy.

500GB of online storage is offered, however, this is only valid for 12 months, with a subscription fee thereafter. Unfortunately, the TS Mini does not arrive with the iTunes server software installed. It is possible to hack this functionality into the box though. DLNA support is included, so our PS3 instantly recognised and streamed media.

While its external options are fantastic for future upgrades, we'd rather have seen more internal drive bays. The lack of iTunes server functionality is also a little lacking considering the price tag, and the interface needs some work to improve stability.

The TS mini is a decent first effort from ASUS, but there's still room for improvement. It's also expensive given the small amount of storage.



- 4 X 3.5IN DRIVE BAYS
- 1 X SEAGATE BARRACUDA 7200.11 1TB DRIVE
- 4 X USB 2.0, 1 X ESATA
- WINDOWS HOME SERVER

APC MAGAZINES apc EDITOR'S CHOICE

$749

9/10

HP MediaSmart Server EX490

@ http://welcome.hp.com

✔ Excellent version of Home Server; stable; fast.

✖ Expensive.

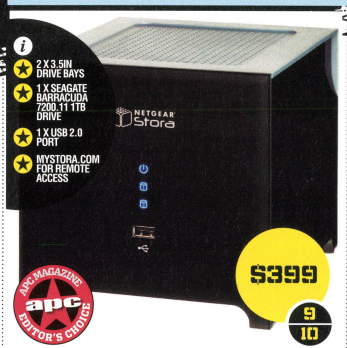
HP nails the home server.

HP has taken the Home Server route with this box, using the Windows Home Server software and running on an Intel Celeron at 2.2GHz, with 2GB of DDR2 RAM. Like the ASUS TS mini, it only ships with a terabyte of storage, but it's much more upgradeable. The drive within is a 1TB Seagate Barracuda 7200.12, occupying one of four hard drive bays, leaving you three more bays for the day when your DivX collection starts self-reproducing.

The initial setup of the EX490 is a very friendly, automated affair. It was the only box to automatically hit the net and download the latest version of all software, a great touch that saves hassles down the track. It's probably due to this auto update that stability of the Home Server console was perfect, unlike the ASUS box.

Speaking of the console, the HP tailored version is a gorgeous creation that walks even the most novice users through all of the functionality on offer. It really couldn't get any easier, even for usually tricky tasks such as setting up remote iPhone access to your files. Full DLNA and iTunes serving are both included, as is the popular TwonkyMedia. HP's automatic Media Collector will happily scan your network PCs for new media files while you're taking a nap, and the Video Converter software will then automatically convert them to a format that is most compatible with a wide range of devices. Backup options are the standard Home Server options, which are more than enough for the average home network.

The only issue with this box is its price. At around the same cost as the 4TB NAS boxes, but with only a quarter of the storage space, you pay a high premium for the convenience and power of the HP-tuned Home Server interface. However, if you've got money to spare, this offers a very simple yet powerful experience.



NETGEAR Stora

@ www.netgear.com.au

✔ Easy to use; great remote access features.

✖ Small overall storage space.

The Stora couldn't be simpler to use.

It's one of the smaller boxes that we tested, and has pleasingly simple lines that will be right at home in any cubic IKEA loungeroom. Like the Thecus, this small size is mostly due to the fact that it's only got two drive bays, one of which is empty on arrival. The other bay includes a single Seagate Barracuda 7200.11 1TB drive — installing a second drive (highly recommended) automatically formats the two to RAID 1 to provide the redundancy.

As expected for such a novice-friendly drive, installation couldn't be simpler. Plug it in, install the small client software and away you go. However, unlike many of the NAS devices, which simply allowed us to click through to shared folders without logging in, the Stora *always* requires the user to log in. Don't forget your username and password unless you feel like resetting the entire unit.

Remote access to the box is handled by logging in to the **www.mystora.com** page, and cool additional features like mobile phone access are available from this page for a small annual subscription fee. Setting up the Stora for remote access couldn't be easier, unlike the cryptic instructions that shipped with several of its competitors. Even the biggest novice will have all of their media files accessible from anywhere in the world in a matter of minutes. Using the device's HipServ 2.0 media server, it's even possible to remotely stream certain file types from within your remote web browser, rather than having to download them first. iTunes and DLNA server are also ready out of the box and worked flawlessly. Backup options are relatively simple, while Mac users will appreciate the inclusion of Time Machine support.

It might not have the biggest storage space around, limited to 1TB even with two drives due to the forced RAID 1 implementation, but for those who want an easy, affordable NAS it comes highly recommended.



Seagate NAS 440

@ www.seagate.com

✔ Excellent backup software; robust encryption; four bays.

✖ Not competitively priced.

A SOHO NAS that includes a few media specialties.

It might be pitched as a small business NAS device, but the NAS 440 straddles the divide between consumer and geek thanks to the inclusion of media-streaming features. And thanks to some rather high-end features, it's well suited to larger networks that need to do more than simply back up photos or stream shaky cam footage of Avatar. But they'll pay for the privilege.

With four drive bays, there's plenty of room to upgrade if you choose to, and it also opens up RAID 5 for a nice performance/safety mix. RAID 0, 1, and 10 are also supported. These drives are all hot swappable, and access to the bays couldn't be simpler.

Dual Gigabit Ethernet ports provide redundancy in the case of a single port failure, or the installation of a second NAS 440 purely for backup needs. Utilising a Marvell processor running at 1.2GHz, along with 256MB of onboard RAM, performance when navigating the proprietary Seagate interface was extremely responsive. Combine this with a gorgeous interface, and setting up the NAS 440 was one of the most pleasant experiences in the roundup.

Backing up is done via separate software, which arrives with ten keys out of the box. This software justifies the otherwise exorbitant price tag, as it's one of the most powerful backup solutions we've seen. Provided your network PCs don't all have massive hard drives, it's possible to do full system restores direct from the NAS 440 in the case of a full hard drive failure, OS and all. However, for the average home user who only needs to do basic media backups for a handful of PCs, this powerful suite of software is overkill. The extensive file encryption options included are likewise overkill for households, unless you've got some exceptionally weird home videos that you don't want hitting YouTube anytime soon.



Thecus N2200 4TB

@ www.thecus.com

✔ Excellent price per terabyte; small footprint.

✖ Sluggish interface.

A Tardis of storage – this box has plenty of space inside.

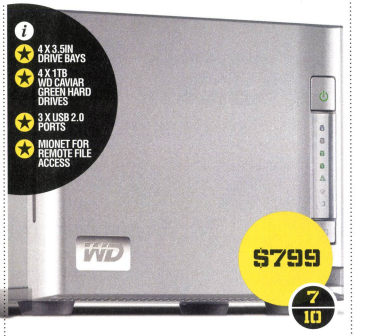
Unless you're already a NAS boffin, the name Thecus is probably Greek to you. A relatively new company founded in 2004, its sole focus is the creation of storage solutions, with a focus on networked devices. We were recently impressed by the budget baby N0204, so had high hopes for its bigger brother, the N2200.

This twin bay NAS won't win any awards for good looks, but it's got one of the smallest footprints for a 4TB device in our roundup. Installing new drives couldn't be easier, with a tool-less design allowing for quick hot swaps. As it only has two drive bays, the RAID options are limited to 0, 1 and JBOD. Even though it's actively cooled by a 60mm fan, there's very little noise pollution, even with both drives thrashing simultaneously. Four USB 2.0 ports provide plenty of room for external drives, but there's no eSATA support in sight.

For such a small box, it's quite surprising to see the amount of functionality squeezed inside. DLNA and iTunes serving are present, as are email alerts for hardware failure, USB print serving and UPnP. A nice touch is the support for various modes of scheduled downloads, including BitTorrent, HTTP and FTP. It can even be used as a standalone security box, able to record from two IP cameras (not included).

Using an AJAX interface, this is another NAS that shuns Windows Home Server in favour of a proprietary solution. Setting up via this interface is relatively easy, though enabling many of the more advanced features will require extensive reading of the 100-page manual. Unfortunately it's also not the most responsive interface, with regular pausing when updating options or changing tabs.

If you're not looking for the quickest speeds, the N2200 offers excellent value for money yet retains most of the features the average home user requires.



WD ShareSpace 4TB

@ www.wdc.com

✔ Masses of storage space.

✖ Only accepts WD drives; limited feature set.

This NAS offers decent bang for your buck.

With a long history in storage, it's no surprise that WD offers one of the easiest-to-use NAS devices in our roundup. Thanks to its custom interface, getting this box to share files on your network is a breeze.

Like most of the devices in the roundup, this box shuns the Windows Home Server Console, instead utilising a custom WD-built interface called WD Discovery, accessed via your web browser. It's extremely responsive and well laid out, with the basic option perfect for those who just want to share files. Switching to advanced unveils a plethora of functions, which are still easy enough to understand for NAS noobs.

DLNA and iTunes serving are both included, as is remote access of files via WD's MioNet service. If a drive volume fails, the ShareSpace can automatically notify you via email, while WD's excellent automatic downloading interface allows you to grab files while you and your main PC are sleeping.

With four 1TB drives, the ShareSpace has plenty of room to spare. In our review sample, the drives were installed in a standard RAID 5 configuration, allowing for decent performance as well as data recovery. Unfortunately these drives can't be hot swapped, but at least they're easy enough to access. Because there are so many drives, a 90mm cooling fan is installed at the rear of the case. It's relatively quiet, but not totally silent like the passively cooled NAS devices.

Connectivity is lacking, with only two USB 2.0 ports on the rear, and another on the front. Backup functionality is also limited to only three PCs, as the included WD Anywhere software only has three licences.

If you're looking for enough storage space to keep a family's worth of memories in one box, the ShareSpace offers a very competitive price per gigabyte. However, this ageing box isn't getting any younger, and it misses out on some of the cool new tricks that other NAS devices offer.

Best tech

APC's independent reviewers point to the best technologies in the top-selling product categories each month. We only change products when a better one comes along. What you see here is the best technology available on the market right now.

LOOK OUT FOR THESE

NEW

Products marked with this stamp are the latest additions to Best Tech.

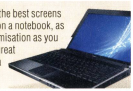


Movers & shakers

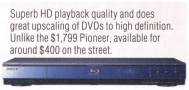
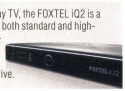
The new USB

Now that motherboards with USB 3.0 ports are pouring on to the market thanks to ASUS and Gigabyte, we're going to see a similar emergence of USB 3.0 devices that will make use of the new technology. Like Western Digital's MyBook 3.0, storage will be the first type of product to really benefit, with transfer speeds over 100MB/s in real-world usage.

	NOTEWORTHY	BEST VALUE	BEST PERFORMER
GENERAL PC	TI Computers Deluxe 540 NEW With Intel's new Core i3 540, 4GB of RAM and a GTX 260 graphics card, this machine ticks all the boxes for performance and value. **$1,380 > TI Computers > ticomputers.com.au**	HP Pavilion PC-090a A smashing all rounder for the discerning user. This PC has a Core i7 860 and 8 gig of RAM. That's plenty of power for nearly everyone. **$2,699 > HP > hp.com.au**	Altech NRG Storm i7 Not cheap, but with a Core i7 975 overclocked to 4.25GHz, this space shuttle booster will disorient you with the way it rips wait times to pieces. **$7,899 > Altech > www.altech.com.au/nrg**
PANEL PC	ASUS EeeTOP PC ET2203T For a panel PC, ASUS have hit the nail on the head. Including Blu-ray, 1080 HD screen, SRS sound and touch optimised software. **$1,699 > ASUS > asus.com.au**	HP TouchSmart 300 & 600 HP' Touchsmart all-in-one, touchscreen PCs run Win 7 and are the closest thing to the iMac in the PC World. The 300 is the affordable one. **$1,699 > HP > www.hp.com.au**	Apple iMac 27in A stunning computer gets even better as Apple release the 27in iMac, complete with LED 2,560 x 1,440 display, as well as Core i5 CPU. **$2,599 > Apple > www.apple.com.au**
NAS HOME	Linksys Media Hub NMH405 Automatically scours your network to find the multimedia files on attached systems, then copies or references them and plays them. **$700 > Cisco > www.linksysbycisco.com**	Iomega Home Media Network When nanna asks you what NAS she should buy, point her to this 1TB NAS designed to store and share images and multimedia across DLNA devices. **$429 > Iomega > www.iomega.com.au**	My Book World Edition II The ultimate backup and media storage for PC/Mac. Up to 4TB with mirrored RAID 1 drives and media streamer and iTunes server. **$999.99 > WD > www.westerndigital.com**

	NOTEWORTHY	BEST VALUE	BEST PERFORMER
EXTERNAL DRIVE	**Iomega eGO Triple Interface Drive** Stunning portable 320GB and 500GB drive, with a suite of software and FireWire 800 and 400 ports as well as USB 2.0.  **$179 (320GB) > Iomega > iomega.com.au**	**Toshiba 640GB USB 2.0** This 640GB USB 2.0 Portable External Hard Drives comes with system backup (Windows only), password protection for added security and enhanced software features.  **$199 (640GB) > Toshiba > toshiba.com.au**	**WD MyBook 3.0** NEW This 1TB external hard disk drive sports the lastest 3.0 speeds. It even comes with a USB 3.0 PCIE card in the box. It's triple the speed of last generations drives too.  **$249 (1TB) > Western Digital > wd.com**
NETBOOK	**HP Mini by Studio Tord Boontje** Though the internals are quite run of the mill, you'll stand out with the unique layered image finish on this high style netbook.  **$799 > HP > hp.com.au**	**Toshiba NB200** It's not the best looking netbook out there, but with a set of full size keys, light weight and 1,024 x 600 and outstanding battery life, you wont be left wanting.  **$749 > Toshiba > toshiba.com.au**	**HP Mini 210** NEW Even though its got a low pricetag, the performance and design of this model mean its right at the top of the list. Six hours battery isn't bad either!  **$449 > HP > hp.com.au**
NOTEBOOK ALL-ROUNDER	**Toshiba A500** Big brand, great-value entertainment notebook with a 16in screen, powerful graphics, HDMI connection and built-in TV tuner.  **$1,599 > Toshiba > www.toshiba.com.au**	**HP dv2-1001AU** A fantastic offering, melding the price and convenience of a netbook with the powerful hardware and comfort of a fully-fledged notebook.  **$1,199 > HP > www.hp.com.au**	**Samsung X460** Thin and light, but with a 2.66GHz Intel Core 2 Duo P9600 processor, 4GB of DDR3 1066MHz RAM, and NVIDIA GeForce 9200M GS graphics.  **$2,999 > Samsung > www.samsung.com.au**
DESKTOP REPLACEMENT	**Pioneer DreamBook M57T** Obscenely powerful notebook, with an Intel Core 2 Quad QX9300 Extreme processor running at 2.53GHz and 4GB of 1,066MHz DDR3.  **$4,169 > Pioneer > pioneercomputers.com.au**	**Dell Studio XPS16** With one of the best screens we've seen on a notebook, as much customisation as you want and a great design, it's a winner.  **$1,789 > Dell > www.dell.com.au**	**Toshiba Qosmio X500** Weighing in at 4.6kg, with a monstrous 18.4in display, the X500 offers great multimedia, a Core i7 CPU and a gamers graphics card.  **$2,699 > Toshiba > www.toshiba.com.au**
PHONE CONSUMER	**Sony Ericsson AINO** A super duper phone, capable of streaming media from your PS3 and DNLA network devices over 3G or Wi-Fi. Also comes with a Bluetooth dongle.  **$849 > Sony Ericsson > sonyericsson.com.au**	**Nokia 6760 Slide** This side mounted slide out keyboard model is packed with social networking tools, and access to the Nokia Ovi store will keep you busy.  **$479 > Three > Three.com.au**	**iPhone 3G S** Glorious UI, 3G speed, and now faster, slicker graphics, can shoot video and take better photos. The App store is a killer too.  **Plan > Apple > www.apple.com.au**
PHONE BUSINESS	**HTC Touch Pro2** Even though it's cursed with Windows Mobile 6.5, it's a wonder to behold. The best keyboard on the mobile market mixed with excellent apps.  **$1,399 > Telstra > Telstra.com.au**	**Nokia E75** Works like a BlackBerry with the new Nokia Messaging push email service. You can configure up to 10 Gmail, Yahoo Mail, Live Mail and other free and hosted email accounts.  **$979 > Nokia > www.nokia.com.au**	**BlackBerry Bold 9700** The new BlackBerry flagship, a tad smaller than the 9000 but with a higher-res screen. Also runs on the regional HSDPA networks of Vodafone and Optus, and Telstra's NextG.  **Plan > RIM > www.blackberry.com**

	NOTEWORTHY	BEST VALUE	BEST PERFORMER
MEDIA PLAYER	**Apple iPod nano** A new long narrow design with an accelerometer that kicks the nano into landscape mode when you hold it sideways. Now in 8GB and 16GB models.  **$199 (8GB) > Apple > www.apple.com.au**	**Sony Walkman X** This may be sacrilegious, but we think Sony's new Walkman X is better than the top iPod, with a 3.2in OLED touchscreen, noise-cancelling tech and Wi-Fi.  **$649 (16GB) > Sony > www.sony.com.au**	**Archos 5i** A tour de force — the most stunning media player yet, plays HD content and has in-built GPS, all running on Android. In 8GB to 500GB versions.  **$445 (8GB) > Archos > itechinternational.com**
MP3 DOCKS	**Altec Lansing octiv AIR M812** Unlike most other iPod docks, the dock and speaker connect to each other wirelessly up to 30m away. Produces a warm, well-balanced sound.  **$799 > Altech Lansing > www.alteclansing.com**	**TDK NX-04CD remote & Mic** Audio performance blows similarly priced docks out of the water, and looks great. But it can also play music off USB drives and SD cards.  **$300 > TDK > www.tdk-media.com**	**B & W Zeppelin** Simply the best-quality iPod dock speaker system around, even if not the most expensive. So good you need 320Kbit/s tracks to get the most out of it.  **$1,300 > Bower-Wilkins > www.bower-wilkins.com**
GPS	**TomTom XL 340** A great beginner GPS. This model has a huge screen, visible in the day with an easy to use interface and clear, loud speaker.  **$399 > TomTom > tomtom.com**	**Uniden TRAX 5000** We love Uniden because of its philosophy of delivering on the fundamentals — bigger screens, easier navigation, better 3D maps.  **$349.95 > Uniden > www.uniden.com.au**	**TomTom GO 930** The top-of-the-line TomTom delivers traffic messaging, intelligent live routing, FM transmitter, voice-recognition and text-to-speech.  **$849 > TomTom > www.tomtom.com.au**
COMPACT CAMERAS	**Ricoh CX2** The CX2 is even better than the CX1. Also with a DSLR-style CMOS sensor, the CX2 is one of our favourite compacts of all time.  **$599 > Ricoh > www.ricoh.com.au**	**Kodak M320 Easyshare** The M320 is cheap, easy to use and produces great images. Takes a picture as well as a camera twice its price.  **$180 > Kodak > www.kodak.com.au**	**Ricoh GXR** Lens, image sensor and image processing engine are one block, meaning the lens are tuned to the lenses. Price yet to be announced.  **TBA > Ricoh > www.ricoh.com.au**
DSLR CAMERAS	**Canon EOS 5D** Though the price tag is heart stopping, the 5D is one of the best cameras out there, bar none.  **$4,799 + lens > Canon > www.canon.com.au**	**Canon EOS 550D** Easy to use, the 550D offers HD video and heaps of features, including the best LCD screen on the market.  **TBA > Canon > www.canon.com.au**	**Nikon D90** This is just sexy! The first DSLR with HD video, the D90 is the best non-professional camera you could get without sending yourself broke.  **$1,699 > Nikon > www.nikon.com.au**
HD CAMCORDER	**Sanyo VPC FH1 Xacti** With a super small design, oodles of connectivity and some seriously good image quality, this camera is a winner.  **$799 > Sanyo > sanyo.com.au**	**Sony HDR-TG5VE** For something so small, this captures stunning Full HD at the maximum 1,920 x 1,080 res. Its slim body is not only lightweight and looks uber cool, it also houses a GPS receiver.  **$1,499 > Sony > Sony.com.au**	**Sony HDR-XR520V** Want the best consumer camcorder out there? With 240GB HDD storage capacity, 12MP still images and so much more.  **$1,699 > Sony > www.sony.com.au**

	NOTEWORTHY	BEST VALUE	BEST PERFORMER
PHOTO FRAMES	**D-Link DSM-210**	**Kodak P720 Touch Digital**	**Samsung SPF-105V**
	25cm Wi-Fi photo frame that streams net content and can accept content via a "widget" located on the PC desktop. 	Kodak's entry-level photo frame, with a good quality 7in screen and the excellent Quick Touch Border which makes it really easy to navigate menus. 	Almost like a mini-TV with an impressive monitor and able to play MP3s and video files, plus lots of slideshow effects. 
	$499 > **D-Link** > **www.dlink.com.au**	**$140** > **Kodak** > **www.kodak.com**	**$399** > **Samsung** > **www.samsung.com/au**
HDTV	**LG PS70**	**Panasonic VIERA G15 Neo**	**Panasonic Z Series** NEW
	Features in-built "Time Machine" DVR recording. For this model, the PS70, just add a hard disk. 	This represents the new state-of-the-art in plasmas, with brighter LCD-like pictures and faster motion image response. 	A super thin plasma that's lighter than others, with Full HD wireless transmission. This series sports all the bells and whistles. 
	$3,299 for 50in > **LG** > **www.au.lge.com**	**$3,299** > **Panasonic** > **www.panasonic.com**	**$5,999** > **Panasonic** > **panasonic.com.au**
TV TUNER	**Hauppage MiniStick-HD**	**Kworld DVB-T 395UR**	**AverTV TwinStar PCI-E**
	The size of a small USB key, it's the smallest Freeview-tuned digital TV stick in Australia — great quality, cheap, and perfect for notebooks. 	A basic HD tuner card that allows you to watch HD digital TV on your PC or notebook. It's not flash, but it works well, is portable and convenient. 	This is the best HD tuner on the market. Twin digital tuners for simultaneous record/playback, solid software and MCE compatible drivers. 
	$69 > **Hauppage** > **www.newmagic.com.au**	**$79** > **Kworld** > **www.kworld.com.tw**	**$159** > **Altech** > **altech.com.au**
DISC PLAYERS	**Sony PlayStation 3 80GB**	**Kogan Blu-ray Player**	**Sony BDPS350**
	Yes, it's a games console, but it also doubles as a Blu-ray player that's as good as any standalone devices on the market. It's the same price as some of the better ones, so do your sums. 	Basic, affordable. Plays back good quality HD and upscales DVDs. Now supports BD-Live (Profile 2.0) which it can receive internet content and firmware upgrades. Good buy at $249 . 	Superb HD playback quality and does great upscaling of DVDs to high definition. Unlike the $1,799 Pioneer, available for around $400 on the street. 
	$699 > **Sony** > **www.sony.com.au**	**$249** > **Kogan** > **www.kogan.com.au**	**$400** > **Sony** > **Sony.com.au**
DVR	**FOXTEL i02**	**Dvico TviX M6600-N** NEW	**Panasonic DMR-BW850** NEW
	If you watch pay TV, the FOXTEL iQ2 is a must. Records both standard and high-definition free-to-air TV to a spacious 320GB hard drive. 	There's little this won't do with dual HDTV tuners, 1TB internal storage, network playback, full 1080p as well as HDMI 1.3a support. 	This 2nd-gen Blu-ray recorder is a tempting all-in-one option for anylounge room. Includes 240 hours of HD recordings onto the hefty 500GB hard drive. 
	$10 month > **FOXTEL** > **www.foxtel.com.au**	**$699** > **Dvico** > **Dvico.com**	**$2,199** > **Panasonic** > **www.panasonic.com.au**
ROUTER	**Netgear Rangemax** NEW	**TP-Link TL WR941ND Wireless N**	**Linksys Dual-N WRT610N**
	A dual-band gigabit router built specifically with a huge list of features, including a seperable Guest network for visitors, and a media server. 	A Draft 2.0 N router with MIMO, using three adjustable antennas for speeds of up to 200Mbit/s. Performance is decent and the documentation is good. 	It does dual-band Wireless N (5GHz and 2.4GHz), is one of the best performers in testing and looks great. Comes with Linksys' superb LELA network setup wizard. 
	$299 > **Netgear** > **netgear.com.au**	**$129** > **TP-Link** > **www.anyware.com.au**	**$290** > **Linksys** > **linksys.com.au**

APC MAGAZINE MASTER BUILDER PRO BUILD

One of the joys of computing is building your own PC. Each month a Master Builder will configure a PC for a specific task and pricepoint, recommending the best components for the job.

Build a Core i3-based home theatre PC

With the launch of the H55 chipset and Core i3 processors, Intel has given Microsoft's Media Center users one of the best HTPC platforms yet.

David Kong of Enspire Digital is one of the few professional system builders who makes a distinct line of media centre PCs, so we've asked him to build for us a Core i3-based media centre PC. The combination of H55 chipset and CPU gives the perfect blend of performance, low power consumption and hardware acceleration for decoding the latest media file formats. There's also support for bitstreaming the latest Dolby Digital True HD and DTS-HD MA soundtracks from Blu Ray discs if you have a supporting AV receiver.

CORE SYSTEM

SYSTEM COST $1,047

CPU

Intel Core i3 530 2.93GHz — $168

The Intel Core i3 is the first processor from Intel with integrated graphics. Like the Core i5 and Core i7 it has an integrated memory controller, but is only dual-core in design. With HyperThreading support included, you've got plenty of processing power to play videos and music using even the most demanding codecs.

CPU COOLER

Aywun V6 LP — $32

The design of our chosen case means we need a low profile cooler in our system. Whilst we could just settle for the Intel stock cooler, going with the Aywun keeps the maximum noise level quite low. This fan has a rubber-mounted 92mm fan and a fan speed adjuster to control the fan speed.

MOTHERBOARD

Gigabyte H55-USB3 — $172

This Gigabyte motherboard is one of the new boards sporting USB 3.0 ports. It has a full complement of video connections including HDMI, DVI and DisplayPort along with optical SPDIF output, 6 channel analogue and even FireWire. Whew!

MEMORY

Patriot Signature Line 133MHz 4GB kit — $138

Simple, reliable and not pricey or flashy. Just what we want in RAM.

GRAPHICS

Intel HD Graphics — $0

The latest Intel Core i3 processors actually integrate the graphics processing unit inside the CPU. This means lower power consumption and less heat. All good things for a media centre. The graphics capabilities aren't exactly mind-blowing for 3D but are perfect for our media centre, with support for MPEG-2, H.264 and VC1 hardware decoding.

SOUND CARD

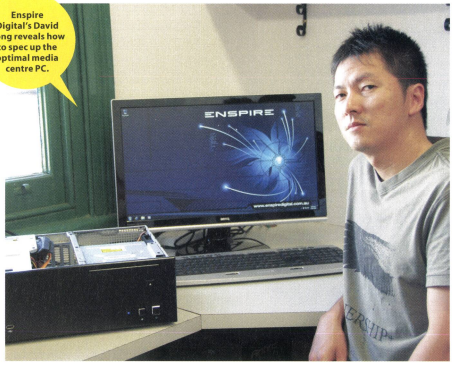
Onboard — $0

Adding a sound card for a media center is pretty pointless unless you'll be connecting it using analogue outputs. Otherwise for digital connections, the onboard will be fine. Our chosen Gigabyte motherboard has a Realtek HD audio chipset, which offers a mature driver and decent options for configuring it to suit your tastes. As a bonus the onboard HDMI audio also supports bitstreaming the latest Blu-ray soundtracks.

HARD DRIVE

Western Digital 1TB WD10EARS — $138

Storage, storage and more storage. A media centre can never have enough storage space. It's amazing how quickly a 1TB drive can be



Enspire Digital's David Kong reveals how to spec up the optimal media centre PC.

filled with music, photos, DVDs and recorded TV. The WD10EARS is the latest 1TB drive from Western Digital, and is one of the first to use its advanced format technology. In a nutshell, advanced format technology replaces the normal 512B sector size with 4K sectors, which gives more usable space on a hard drive. If you have two drives you can dedicate one drive to recording TV shows and leave the first drive for music, photos and DVDs.

OPTICAL DRIVE

Samsung 8x Blu-ray/DVD Burner — $151

With the growing availability of Blu-ray, it makes sense to include a Blu-ray drive in our perfect media centre. One less component in our living room! As an added advantage, our media centre loads discs faster than any standalone player and is easily upgradeable to the latest BD-Profile. Throw in the ability to make the drive region-free and it's really hard to fault our media centre as a Blu-ray player.

POWER SUPPLY

Seasonic 430W — $103

Quiet and very efficient, the Seasonic M12 430W ticks all the right boxes needed for a media centre.

CASE

Silverstone GD04 — $145

It's hard to make a black box sexy, so we'll go for a case that's small, functional and quiet. The Silverstone has 3 quiet 120mm fans, room for 2 hard drives that are rubber mounted, and it is very shallow, which means it will fit into most entertainment cabinets without trouble.

TV TUNER

Hauppauge HVR-2200 — $199

This is one of the best tuners on the market at the moment, giving you 2 digital or 2 analogue tuners and an FM tuner as well, which is finally supported under Windows 7.

EXTRAS

KEYBOARD/MOUSE

Visenta V1 — $105

For setting up the media centre, and those times when you want to surf the net on your TV, a wireless keyboard and mouse is indispensable. The Visenta comes with a multi-touch touchpad, which makes scrolling and clicking really simple. Together with a decent range, it's one of the best media centre keyboards we've used.



REMOTE CONTROL

Hauppauge MCE Remote Control Kit — $61

To make our media centre user friendly, we need a good remote control. The Hauppauge unit is one of the better ones out there. It has a good IR receiver and has a good shape.

OPERATING SYSTEM

Windows 7 Home Premium 32-bit — $143

Microsoft have further refined Media Center in Windows 7 and now offer several improvements over Vista's version. Most significant is the support for the DVB-T broadcast guide and support for 4 digital tuners without having to resort to registry hacks. We've stuck with 32-bit even though we have 4GB RAM because of problems with codecs in the 64-bit version. Although there are fixes and workarounds it's just not worth the effort at the moment.

Total with extras: $1,555

72 masterbuilder

HOW TO BUILD THE ULTIMATE PC



master builder competition — powered by ASUS

Master Builder semi-finalists

Entries for our Master Builder competition have now closed and we have picked the semi-finalists.

Our mission to find Australia's first Master Builder has now entered the next phase. We have picked 36 outstanding builds from the hundreds of competition entries received. Their owners will now battle it out in the semi-finals, with a special challenge set by *APC* and our sponsor, ASUS.

The outstanding builds received in our competition covered a variety of PCs, from all-rounders and gaming PCs to media centres and video-editing machines. They revealed a strong understanding of the PC building art — and also some clever solutions that created some great value/performance machines.

SEMI-FINALISTS

The semi-finalists will now be given a special challenge, with the top four builders going to the finals which will be held in the APC Labs. The challenge is:

"Define an Extreme All-rounder PC that is outstanding at these three things: gaming, video editing/encoding, and media centre tasks."

The motherboard and graphics card in the PC's configuration must both be made by ASUS — the sponsor of this competition. You don't have to build the PC, but you must define it on paper.

A warning: this is not as simple as it sounds — an all-rounder would be good at all three, but not excel in any. The judges are asking for one that is great at all of them.

The four finalists will receive ASUS hardware and a copy of Bioshock 2.

For more details head to: **apcmag.com/masterbuilder.htm.**

THE FINALISTS

Adrian Rundle Media PC
Andrew Carr All-rounder PC
Barton IP All-rounder PC
Bradley Wilson Gaming and video-editing PC
Braycen Jackwitz Internet PC
Chris Hutcheon All-rounder PC
Christopher Lampard Gaming-focused all-rounder PC
Colin Bloomfield Experimental PC
Damien Pedler Home theatre PC
Daniel De Vries Affordable gaming system PC
Daniel Valastro Mid-range gaming PC
Darren Gatt Budget all-rounder PC
David Pierson Multimedia and gaming PC
Donald Connor High performance on a budget PC
Dushan Karovich-Wynne Powerful all-rounder/casual gaming PC
Ho-Kyung Lee (Benjamin) Ultra-affordable
Ian Reschke Gaming PC
James Moffat Gaming PC
Jason Campbell Media centre PC
John Cox Video-editing PC
Justin Goldsworthy Ultra-affordable all-rounder PC
Karen Conneeley & Robert Halas Network Attached Storage PC
Karl Slate Best bang-for-buck gaming PC
Kye Nelson Gaming/extremely fast MSN'ing PC
Leith Magon Home theatre PC
Luke Monaghan Movie & music appliance PC
Mark Roper All-rounder PC
Matt Callaghan Budget gaming PC
Matt Witherow All-rounder PC
Mick Brown Windows Home Server PC
Rod Petch The ultimate all-rounder PC
Samuel Reynolds Budget gaming PC
Scott Weaver Gaming/Photoshop PC
Simon Ware Extreme on a small budget PC
Sunny Yeung Gaming PC and media centre PC

You can see all the builds at **apcmag.com/masterbuilder**

MASTER BUILDER'S LIVE BUILDS

APC puts part of its famed Labs online with our new "Live Builds" project.

To celebrate the art of PC building that has inspired our readers in the Master Builder competition, *APC* has launched an exciting new service called "Live Builds" at **apcmag.com/masterbuilder**. These are six PC configurations that are maintained and updated around the clock by *APC*'s technical editor, Nick Race, who will use his knowledge of the PC and components industry and the opinion of our reviewers to ensure the builds carry best-in-class components.

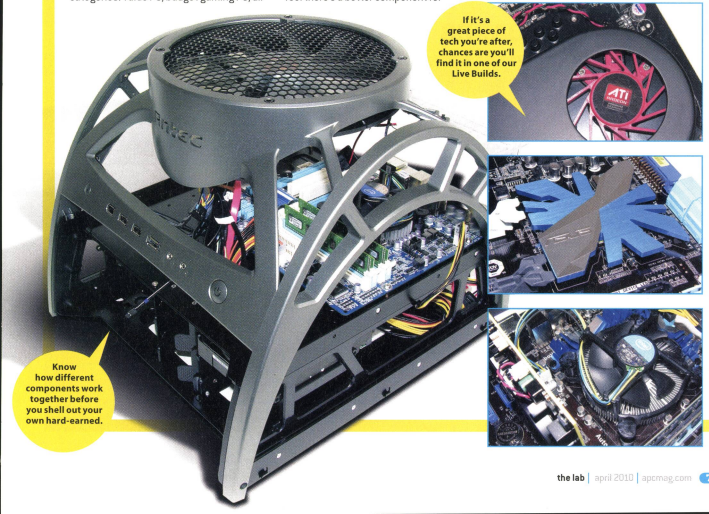
The configurations are for PCs in these categories: value PC, budget gaming PC, all-rounder PC, premium gaming PC, extreme (God Box) PC, and media centre PC.

When a new component is released that *APC* believes will improve the performance or value/performance equation of one of the PCs, we'll swap it into the configuration and then measure the impact on the system's overall performance. You'll also be able to see a log of all the changes to the PC over time and how these have improved its value and performance.

Most of all, we want your opinion. If you feel there's a better component for one of Nick's Live Builds, you can suggest it in the comments under each build, and if we're convinced you have a case, we'll add it to the Live Build and measure its impact on the benchmarks.

APC's Master Builder section will also carry PC configurations from our professional master builders published in APC magazine, as well as all the entries from our Master Builder Competition.

Find Live Builds online, at apcmag.com/masterbuilder.htm.



ASUS MASTER CHALLENGE 2

BUILD A GAMING PC

Check out the PC which won our first ASUS Master challenge, at **apcmag.com/masterbuilder**. Then tell us if you can build one as good, if not better, with the components selected by ASUS.

The entry must include one motherboard and one graphics card from the list below. You don't have to physically build the PC, just define it on paper. Try to pick other components that complement the characteristics of the particular motherboard and graphics card and explain why your creation should win.
The winner will get an ASUS Republic of Gamers Maximus III GENE motherboard.

Go to apcmag.com/masterbuilder for the entry form.

MAKE SURE YOUR ENTRY INCLUDES BOTH A MOTHERBOARD *AND* A GRAPHICS CARD FROM THOSE LISTED BELOW.

ASUS MOTHERBOARDS



P6X58D PREMIUM

MAXIMUS III EXTREME

P7P55D-E DELUXE

ASUS GRAPHICS CARDS



EAH5850 DIRECTCU TOP

EAH5870 TOP

5970 WITH VOLTAGE TWEAK

ASUS MASTER CHALLENGE WINNERS!

APC and ASUS judges have selected the winner of the inaugural ASUS Master Challenge. Contestants had to build a Gaming PC around some motherboards and graphics cards selected by ASUS. The winner is Alistair Roe, of Brisbane, whose PC impressed the judges for its perfect blend of components.

Matthew Wu, from ASUS Australia says: "ASUS congratulates Alistair for creating a perfect machine using the ASUS Republic of Gamers Maximus III GENE mATX motherboard and the ASUS EAH5870 graphics card as a baseline. The combination of the powerful Lynnfield CPU with high-bandwidth memory and very good CPU cooler, will allow the user to achieve a really nice overclock to add to the gaming experience. The monitor is perfect for the high performance that the ASUS EAH5870 delivers and adding another 2 monitors will allow Alistair to experience AMD's Eyefinity. The power supply and case will provide the performance and space for an extra ASUS EAH5870 added onto the Maximus III GENE in the future if more performance is needed. This is a perfect portable LAN gaming machine that everyone will be envious of."

Alistair wins an ASUS P7P55D, a motherboard ideal for building your first Core i5 or Core i7 PC, which makes use of the LGA1156 socket.

HONORABLE MENTIONS

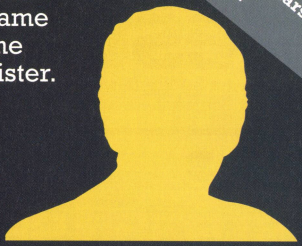
Lucas Cooper
Mike Titchen
Warren Chisholm
Ian Reschke
Ryan Tang
Brad Mazzer
Sam Perrin
Trevor Munn
Peter Read

To view Alistair's build, together with those of the entrants receiving an honourable mention, go to **apcmag.com/masterbuilder**



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Best builds

APC writer and reviewer **Bennett Ring** recommends the best components for three PC builds.



BENNETT RING

Bennett has been overclocking since the Duron days and began his career as a tech reviewer last century.

HOME SERVER $1,933

CPU

Intel Core i3 530

With two cores it'll handle multiple requests with aplomb, but doesn't have a ridiculously fast clock speed that won't be utilised.



Intel > www.intel.com.au — $165

COOLER

Intel stock cooler

There's no need for custom cooling in your server, as this CPU is relatively cool, making the stock HSF nice and quiet.



Intel > www.intel.com.au — $0

MOBO

MSI H55-GD65

With seven SATA II ports all your hard drive upgrade needs will be taken care of for years to come. It'll also remove the need for a GPU.



MSI > www.msi.co.tw — $149

RAM

2GB Apacer DDR3 1,333MHz

2GB is plenty of memory for basic server duties, and keeping to a single stick ensures minimal stability issues.



Apacer > www.apacer.com — $99

GRAPHICS

Motherboard supported

Our motherboard supports pass-through graphics from the i3.



MSI > www.msi.co.tw — N/A

ULTRA-SILENT PC $2,483

CPU

Intel Core i3 530

It's the same CPU as our server, but we're choosing it for the silent PC for the relatively low thermal output of only 73W.



Intel > www.intel.com.au — $165

COOLER

Zalman CNPS9900ALED Copper

It's not passive, but you don't want a passive cooler on today's mid-range CPUs. Besides, it's so quiet that we swear you won't hear it.



Zalman > www.zalman.co.kr — $90

MOBO

Gigabyte GA-P55-UD3

Motherboard fan noise will be a thing of the past with the passive cooling on this excellent mid-range board.



Gigabyte > www.gigabyte.com.au — $149

RAM

2 x Geil 4GB Ultra DDR3 2133MHz kits

It may not have the tightest memory timings, but there's no denying that the overall speed is extremely high. The bargain price doesn't hurt.



Geil > www.geil.com.tw — $270

GRAPHICS

PowerColor ATI HD 5750

Great performance for a passively cooled card, the 5750 can handle most non-gaming related duties with ease.



ATI > www.ati.com — $159

GAMING PC $5,086

CPU

Intel Core i7 860

The Core i7 860 offers excellent gaming performance, without breaking the bank. A superb overclocker for the adventurous.



Intel > www.intel.com.au — $370

COOLER

Zalman CNPS10X Extreme

While it's a little tricky to mount, it'll cool the 860 at a much quieter volume than the stock Intel cooler, and can handle increased voltages.



Zalman > www.zalman.co.kr — $90

MOBO

Gigabyte GA-P55-UD4

This affordable motherboard offers CrossFire support for two ATX cards, and is a very easy board for overclocking your i5 chip.



Gigabyte > www.gigabyte.com.au — $189

RAM

2 x Geil 4GB Ultra DDR3 2,133MHz kits

One of the cheapest DDR3 packs available, giving this machine 8GB of very fast memory at a reasonable price.



Geil > www.geil.com.tw — $270

GRAPHICS

2 x Sapphire ATI HD 5870

The 5870 is the fastest single GPU solution on the market, so installing two guarantees insane frame rates at high res.



Sapphire > www.sapphiretech.com — $1,040

	HOME SERVER	ULTRA-SILENT PC	GAMING PC
HDD	4 x Western Digital Caviar Green 2TB Surprisingly, this is one of the most expensive components in the entire PC. We could have gone cheaper, but you'd run out of room in no time.  Western Digital > westerndigital.com $1,000	2 x Corsair P128 128GB SSD I use this drive in my home PC. It's totally silent, but more importantly, has been utterly reliable compared to many flakey SSDs.  Corsair > www.corsair.com $880	Corsair P128 128GB SSD One of the new generation of SSDs, this Corsair drive sheds the problems of the past, yet remains affordable.  Corsair > www.corsair.com $440
HDD 2	N/A Four 2TB hard drives are enough!  N/A	N/A You can't afford a second drive after buying 2 x SSDs. Move along.  N/A	Western Digital Caviar Black SATAII 1TB This behemoth will provide ample storage room, while the large 32MB cache and 7,200rpm ensure decent load times.  Western Digital > www.westerndigital.com $150
OPTICAL	BenQ DW240S 24x Speed Internal DVD+/- We could have bought a simpler DVD-ROM drive for five dollars less, but it wouldn't have been able to burn discs.  Ben Q > www.benq.com $40	BenQ DW240S 24x Speed Internal DVD+/- We could have bought a simpler DVD-ROM drive for five dollars less, but it wouldn't have been able to burn discs.  Ben Q > www.benq.com $40	Pioneer DVR-118L 22X DVD burner Cheap but not nasty, this burner will install your games quick smart and back up your massive game file library in no time.  Pioneer > www.pioneer.com.au $50
PSU	1,000W Antec CP-1000W ATX PSU All those drives require plenty of juice, especially if you install more down the track.  Antec > www.antec.com $230	Zalman ZM660-XT With heatpipe cooling, this PSU will be quieter than the sound of a BSOD... provided it's not caused by a Soundblaster product.  Zalman > www.zalman.com $190	1,000W Antec TP0-1000W With two video cards and an overclocked CPU, the reliable 1,000W from this PSU is a must.  Antec > www.antec.com $280
CASE	Antec Twelve Hundred Twelve drive bays should keep you going into the next decade, while the extra ventilation will keep everything cool.  Antec > www.antec.com $250	Antec Atlas Black Server case The bigger the case, the less of a problem heat will be, and the fewer noisy fans you'll need. Hence our whopping big server case.  Antec > www.antec.com $230	Antec Twelve Hundred It's big enough for your CrossFire setup, and the window on the side will show it off to the world.  Antec > www.antec.com $250
MONITOR	N/A Log in to your server via your networked PCs and you won't need to use a monitor.  N/A	Acer 23in X233HB This 23in beast runs at full 1080p resolution yet won't cost you the Earth.  Acer > www.acer.com $250	Samsung 30in 305T A 6ms response time ensures snappy image playback, and the massive 30in slab will make the most of your CrossFire setup.  Samsung > www.samsung.com.au $1,600
KEYBOARD	N/A Log in to your server via your networked PCs and you won't need to use a keyboard.  N/A	Microsoft Wireless Optical Desktop 1000 With no wires between the mouse/keyboard and PC, you won't have to hear those blasted cables scratching against your desk.  Microsoft > www.microsoft.com $60	Logitech G19 Gaming Keyboard With a colour LCD screen showing game info, and customisable key backlighting, this is the gamer's weapon of choice.  Logitech > www.logitech.com.au $249
MOUSE	N/A Log in to your server via your networked PCs and you won't need to use a mouse.  N/A	Mouse included with keyboard Our keyboard kit includes a mouse.  Microsoft > www.microsoft.com N/A	Logitech G500 A 2700dpi resolution and 30G acceleration limit ensure every shot will count.  Logitech > www.logitech.com.au $109

COMPUTER FORENSICS USB DRIVE

Criminals beware! We build the ultimate evidence-gathering toolkit.

It's not widely known that Microsoft produces something called The Computer Online Forensic Evidence Extractor (or COFEE for short) and has made it available to police forces since at least 2007. It's designed to gather forensic evidence at crime scenes and during raids from the still-running PCs of suspects and victims.

Microsoft's COFEE reportedly takes the average police officer about 10 minutes to master, and comes supplied on a bootable USB pen drive. It enables trained officers to gather evidence from a running system without the need to call in cybercrime specialists, thereby speeding up investigations.

The USB drive itself is said to contain a package of about 150 forensic programs that enable an investigator to record sensitive information like internet history files and complete practical tasks like deleting Windows passwords. It also enables them to upload the recorded data for further analysis. By April 2008, it was reportedly in use by over 2,000 law enforcement officers throughout 15 countries.

During November 2009, it was announced that someone had leaked Microsoft's secret crime-fighting software online. Hackers and cybercriminals had been dying to get their hands on it. Now it's reportedly available to anyone brave enough to download and install it. We're going to show you how to mimic Microsoft's offering using open-source software to unlock Windows accounts, investigate suspicious activity, see any file on a Windows disk and even peruse files that others believe have been permanently deleted.



FORENSIC TOOLKIT

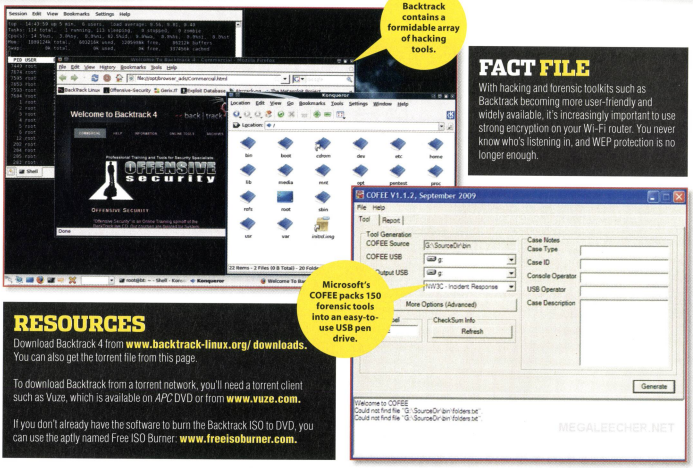
There are plenty of commercial computer forensics systems around these days, but many of them cost serious money or are only available to the police. However, the open-source community has one, called Backtrack 4. This is based on a stripped-down version of Ubuntu Linux, and is stacked with special security and forensics tools.

Despite being Linux-based, Backtrack will grant you complete access to data stored on computers running any version of Microsoft Windows. That's because Windows isn't running when Backtrack is booted from a DVD or USB pen drive. Linux can read Windows disks, but it doesn't obey the file permissions, so the machine's hard disk simply seems to contain a lot of files waiting to be accessed.

Backtrack4 can boot and run directly from a DVD as a Live CD installation that never installs on your computer, but the best way to deploy it is by installing it on a USB pen (with a minimum 2GB capacity). This booting option brings Backtrack closer to Microsoft's COFEE than any other option. See 'Make a bootable USB pen drive' on **apcmag.com/makeusb.htm** for how to do this.

First, you need to download the Backtrack 4 ISO file, which is just under 1.6GB. You can download it from the Backtrack site directly or click the 'Torrent' link on the same page. Once the ISO has downloaded, use it to make a bootable DVD or USB, insert the DVD or USB, and reboot the PC. Select the option to boot with a

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FACT FILE

With hacking and forensic toolkits such as Backtrack becoming more user-friendly and widely available, it's increasingly important to use strong encryption on your Wi-Fi router. You never know who's listening in, and WEP protection is no longer enough.

RESOURCES

Download Backtrack 4 from **www.backtrack-linux.org/ downloads.** You can also get the torrent file from this page.

To download Backtrack from a torrent network, you'll need a torrent client such as Vuze, which is available on *APC* DVD or from **www.vuze.com.**

If you don't already have the software to burn the Backtrack ISO to DVD, you can use the aptly named Free ISO Burner: **www.freeisoburner.com.**

screen resolution of 1,024 x 768. When Backtrack has booted, you'll see a command line. To start a desktop environment, enter the command startx and press Enter. After a few seconds, the standard KDE desktop will start.

ACCESSING A PASSWORD-PROTECTED WINDOWS MACHINE

One immediately handy use for Backtrack is to get to information in a Windows machine whose password has been lost. Be aware, though, that this procedure involves wiping the password, so you can't use this to snoop on the contents of someone's machine. Logging into a Windows system is easy using Backtrack, even if you don't know any of the usernames or passwords that have been set up. That's because you can use a utility bundled with Backtrack to remove the password on any Windows account, including administrator accounts. This is possible because of a file called the SAM (Security Access Manager), which is normally locked by the Windows kernel so that no one else can read it. This is modifiable while Windows isn't running.

First, we need to find out where the system's hard disk resides in Linux. To do this, click the Konqueror icon on the desktop menu bar. This will open the Konqueror desktop browser. Click the 'Storage media' link. If you don't see anything right away, press F5 to refresh the view. Among the media that Backtrack knows about on your system, you'll see your hard disk. Click this and you'll see the folders in C:\, which is useful if you need to copy, add or modify files without logging into Windows directly.

Now select the Home icon on the Konqueror toolbar (the one that's shaped like a house) and click the blue 'up' arrow next to it. Click the Media folder, and then the 'Hard disk' icon again. The location bar will change to give the name we must use to access the disk. It'll be something like /media/disk'.

Now, from the Start menu, select 'Backtrack > Privilege Escalation > Password Attacks > Chntpw'. 'Chntpw' stands for 'Change NT Passwords' and it works on all versions of Windows. When you run the command, a terminal window opens. You can ignore the verbiage on the screen and enter the following command: chntpw -i /media/disk/Windows/System32/config/SAM.

The capitalisations are very important here — 'chntpw' is all lower case. If your Windows partition is called something other than 'disk', put its name in place of this in the command. Press Enter and a text-based menu will appear. Select 'Option one' and press Enter again. This gives you a list of the Windows user accounts. Type the name of the account you want to change (taking care to use the correct case for each letter) and then press Enter.

Chntpw displays lots of details about the account and gives you a number of options. Select 'Option one' and the password will be removed from the account. To exit, type ! and press Enter, then press Q and hit Enter again. Chntpw will ask if you want to write the hive files. You do, so press Y followed by Enter.

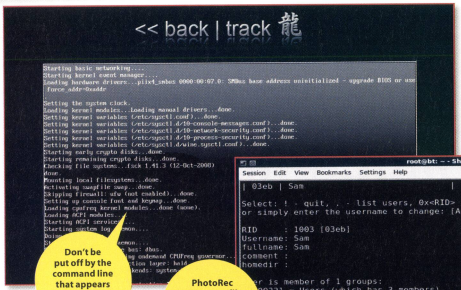
If you now reboot into Windows, you'll be able to log into the account you've changed without being prompted to enter a password.

RECOVERING DELETED FILES

Many people believe that when they delete a file and then empty the Recycle Bin, it's gone for good — but this isn't the case. Windows, like all modern domestic OSs, simply marks the sectors on the disk occupied by the deleted file

POLICE LINE DO NOT CROSS POLICE LINE DO NOT CROSS POLICE LINE DO NOT CROSS POLICE

POLICE LINE DO NOT CROSS POLICE LINE DO NOT CROSS POLICE LINE DO NOT CROSS POLICE



FACT FILE

When you log out of Backtrack from the K menu, the quickest way to reboot the PC is to enter reboot on the command line. You can also shut the PC down immediately by entering the command shutdown -h now.

as available for future reuse. It would be inefficient to overwrite the data those sectors contain until new data is ready to be stored. In the meantime, the old file is still there, available to be read by anyone with access to a file recovery utility.

Backtrack contains several such applications. Among the easier to use is PhotoRec, which is capable of scanning a hard disk and recovering a comprehensive list of all files marked as deleted. In fact, it can recover far more than just files deleted by users, including temporary files left over from when the operating system was installed. This means it's a good idea to have a spare USB pen drive handy to store the recovered files for later perusal, because they can easily run into the thousands. To get going, insert the drive and run Konqueror. Click 'Storage media' and then select your USB pen drive to ensure that Backtrack is aware of it. You can leave Konqueror open and check the scan's progress later.

Now run PhotoRec by navigating to 'Backtrack > Digital Forensics > Forensic Analysis' and then selecting 'PhotoRec'.

The program itself runs on the command line, but it's menu-driven, making it easier to use. When PhotoRec runs, it first presents you with a list of the hard disk partitions on the computer. In the case of a Windows-only machine, there'll probably be only one large one. However, in some Windows 7 installations, there may be a second, small partition that the system uses to store recovery data. Use the up and down arrow keys to select the main partition, then press Enter to continue.

PhotoRec can understand a large number of partition table types and will automatically identify the one used on your disk, so accept the default on the next screen by pressing Enter again.

The next screen enables you to specify the file types to recover. Use the left and right arrow keys to highlight 'File Opt' at the bottom of the screen. Next, press Enter. The resultant display will give you a long list of all the recognised types. If you only want to recover one file type (JPG, for example), press S to deselect everything, then scroll down to the relevant type and press Space. You can use the Page up and Page down keys to navigate through the list more quickly.

Once you're happy with your file type selections, press Enter and select the filesystem you want to scan. Use the left and right arrow keys to select the 'Search' option, then press Enter. This presents you with a choice of filesystem types. For a Windows filesystem, make sure you select 'Other', then press Enter. On the next screen, select 'Free' to ensure that the program only scans disk sectors that are marked as free space. Press Enter again to continue.

You'll now be asked where to store the recovered files. The default is the directory '/usr/local/bin', which is on the boot media. Press the left arrow key three times to get back to the root directory, then press the down arrow key repeatedly to navigate to the media directory. When you reach it, press Enter to see the media connected to the system. One of the devices you find should be the USB pen drive you inserted and navigated to in Konqueror just a moment ago. Select this and press Enter again. Finally, press Y to begin recovering deleted files.

The extraction process can take quite a while, depending on how much free space there is to scan on the disk and the number of file types you've specified. As the scan progresses, the number of files of each type will increase. PhotoRec creates a long list of subfolders in which it stores all the files it's recovered. By perusing these, you may be able to locate some interesting (even incriminating) pictures and other documents. EOTIC

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WORKSHOP

HOW TO GET THE MOST OUT OF DROPBOX

Collaborate on projects, synchronise programs and more, all with one handy application. Jamie Middleton shows you how.

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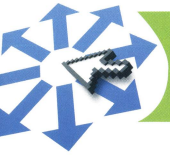
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WINDOWS

DELAY STARTUP PROGRAMS

Q Is there a way to choose the order in which programs in the startup group or Run section of the Registry are executed? I have several programs configured to autorun, and while some, such as AVG, should run straight away, I'd be happy to postpone the execution of others, including update checkers, to help speed up my boot time.

Dennis Crisp

A One program you could use is the appropriately named Startup Delayer (**http://tinyurl.com/yzj7hrs**). This tool enables you to place a delay on the starting of programs in order to prevent system resources from being overwhelmed.

INTERNET

MAKE CASH WITH LIVE PC SUPPORT

You may be used to helping people solve their PC problems, so why not use your knowledge to earn a little extra cash? You'll need a web site with FTP access and MySQL support. Install LiveZilla (**http://livehelp.livezilla.net**) to add live chat, where site visitors can click a button to open a chat window on your PC. Then sign up at PayPal (**www.paypal.com**), go to the Merchant Services tab and create a Buy Now button with your charges. Integrate this with the LiveZilla button (instructions are at **http://tinyurl.com/ydwgxlh**) and people will only be able to chat if they pay first.

WINDOWS

WINDOWS 7 TAKES DIGITAL FILING TO THE FUTURE

Windows' folder structure has long been likened to a filing cabinet. While folders provide a handy way to group files, they're restricted by the same limitations as physical filing systems. The library system introduced in Windows 7 eliminates one of the problems associated with traditional PC folders, because it makes it possible to create multiple containers that can contain the same file. For example, a personal finances spreadsheet can be included in a Finances library as well as the Documents folder and others. This couldn't be achieved with folders alone without duplication.

The Win7 Library Tool (**http://tinyurl.com/yfwwqzp**) is a free program that introduces a number of new ideas for libraries. You can view all your existing libraries in one place and it's easy to edit their properties or create new ones as required — the backup option is particularly handy. By far the most useful feature is the tool's ability to create library mirrors. This option appears after you import existing libraries, make changes and click the 'Apply' button, and it means that paths to libraries can be shortened. After all, brevity is the key.

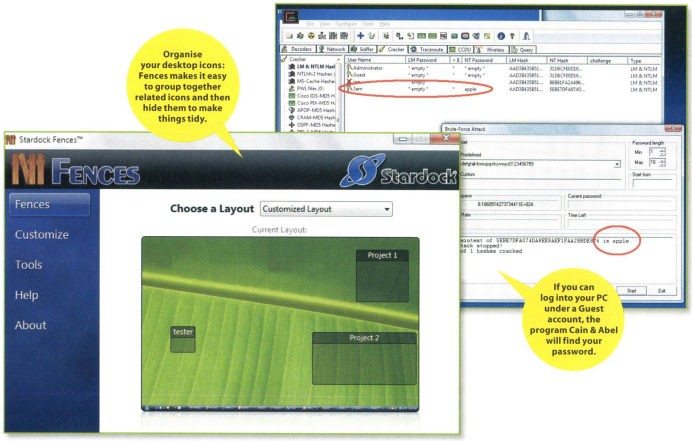
WINDOWS

ORGANISE YOUR DESKTOP ICONS

Q In spite of my best attempts to the contrary, my Windows desktop is a chaotic mess of icons. I do my best to keep related items grouped together, but over time my organisation generally goes awry. I've experimented with creating folders to store shortcuts, folders and files, but this means extra searching and additional clicks to open what I need. Is there a utility that might be able to bring some more order to my computer?

Jeremy Webster

A Desktop customisation specialist Stardock has produced a free tool called Fences that may be just what



you need. Describing the program's basic premise as reminiscent of Windows 3.1's Program Manager may not sound overly appealing, but, importantly, it works. There's also a paid-for version of the program available, but you can download the free edition from **www.stardock.com/products/fences/**. Fences are semi-transparent boxes that you can place anywhere on the desktop and use to house files and shortcuts just like folders. Unlike folders, fences are attached to the desktop, so there's no need to have multiple windows open.

A quick double-click is all that's needed to hide fences and desktop icons, and any shortcuts you use frequently can be excluded from the hide list so you can locate them easily — no matter how busy your desktop becomes. You can add labels or adjust colour settings to aid identification of fences, or resize them to minimise their use of screen real estate. The first time you use Fences, it will offer to arrange existing icons automatically into a number of default fences, and it's possible to create numerous desktop layouts by taking snapshots of fences to record their positions. It's a simple tool that can make Windows much easier to use.

WINDOWS

CRACK WINDOWS PASSWORDS

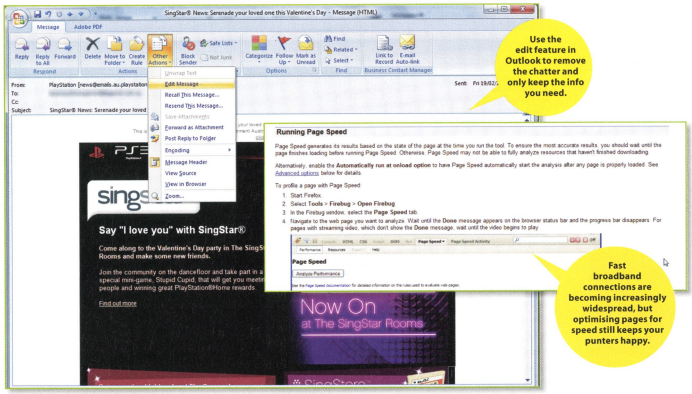
Don't worry if you've had a memory lapse — your Windows machine can be persuaded to divulge its password.

If you can log into the PC under a Guest account, the password-cracking program Cain & Abel is for you. It's an extremely powerful and free password cracker. Cain is the user interface to the application, while Abel is a system service that does the background work. Download the program from **www.oxid.it/cain.html**. After installing the executable, which includes the Pcap library to allow your network card to sniff your LAN for passwords, open the Cain directory under Program Files and copy the 'Abel.dll' and 'Abel.exe' files to C:\Windows. Next, double-click Abel.exe to install the service. Now, from the Start menu, select 'Run' and enter services.msc. This will display a list of services. Find Abel and right-click on it to start it [this saves having to reboot]. To test the software, set up a dummy Windows account and give it a password, then run Cain from the Start menu. Next, click on the Cracker tab. The list of current password crackers is displayed in the left-hand pane. Click on 'LM & NTLM Hashes' and press the large black cross button at the top of the interface. Click 'Next' on the pop-up window to continue. The spreadsheet in the main pane will now fill with the details of your Windows log-in accounts. Right-click the dummy account and move the mouse over 'Brute-Force Attack'. Under the submenu that appears, click on 'LM Hashes'. A window will appear. Abel will try all possible combinations of symbols selected in the Charset dropdown menu. Click 'Start' and, if the password is a dictionary word, the program should crack it with alarming speed.

INTERNET

TONE DOWN IE TABS

I've been a user of Firefox for some time now, and have avoided using Internet Explorer since version 7. At work, however, I have no option but to use Internet Explorer 8, and the way it handles tabs is causing me irritation. When I open several links from a particular site in separate tabs, all tabs relating to that site are coloured in the same way. When I have numerous tabs open, the top



of the browser looks like a rainbow and I want to disable this feature if possible. Can it be done?

Alan Blackwood

A This is something that many IE users have found distracting, so you're not alone. Launch Internet Explorer and click 'Tools > Internet Options'. On the General tab, click the 'Settings' button in the Tabs section and untick the option labelled 'Enable Tab Groups' before clicking 'OK'. You'll have to restart Internet Explorer for the new setting to be applied.

VIRTUALISATION

INSTALLING APPS IN VIRTUAL PC

Q I have Virtual PC set up in Windows 7 and I'm having trouble installing various programs. The installers start OK, but after I've selected a few basic options, a message appears reading 'Please wait while the installer finishes determining your disk space requirements'. A 'Return' button is also visible, but clicking it doesn't seem to have any effect. I've left the installers running for hours at a time and they never progress beyond this screen. The problem only relates to a few programs, but I can see no link between them. What can I do to fix the problem?

Martin Haney

A This is an issue with the Microsoft Installer in Virtual PC, and while little light has been shed on exactly why the problem arises, there are some workarounds you can try that have worked for many other Virtual PC users. If the installer is a Microsoft Installer file (with the '.msi' extension), open up a command prompt and use the command 'msiexec /i name_of_installer.msi'. If this doesn't work, try the alternative command 'msiexec /package name_of_installer.msi /qr' in order to run the installer with a different interface.

However, many installers are supplied as '.exe' files. If this is the case for you, open a command prompt window and use the command name_of_executable.exe /extract:x:\ folder to extract to. This will extract the '.msi' file and enable you to use one of the alternative methods to install the software.

INTERNET

FIND YOUR SITE'S BOTTLENECKS

On the web, the need for speed stops — if you're a designer, you should still optimise images and link to multimedia rather than embedding it directly. This is particularly pertinent in the light of Google's recent admission that page speed is a component of its labyrinthine page rank algorithm. OctaGate sitetimer (**tinyurl.com/ydzryc**) is a free service that not only tells you how speedy your pages are to download, but also pinpoints exactly where any bottlenecks may occur. As pages download, sitetimer saves data on every element, recording how long each takes to download.

More recently, Google came up with Page Speed (**tinyurl.com/ookcxs**), a Firefox add-on that you can use to generate a report on your code and your web server's efficiency in delivering it. If there's a bottleneck, Page Speed will find it.

INTERNET

EDIT EMAILS

Q I store most of my emails so I can refer back to them, but an email conversation can often lead to a lengthy series of replies, with useful information ending up scattered throughout various individual messages. Can I edit emails I've received so that I can group together the portions of text I want to keep, making it easier to find quickly? I'm using Outlook 2007.

Paul Bardwell

A We're always surprised how few people know Outlook lets you edit an email. Open the email in question by double-clicking it, then click the 'Other Actions' button in the toolbar before selecting 'Edit Message'. When you close the email, you'll be given the opportunity to save any of the changes that you've decided to make.



Partition your PC's drive

With huge drives now becoming the norm, it pays to know how to partition them. **Joe Cassels** explains how to do it without trashing the other contents.

Q My notebook came set up with one large C: drive, which contains Windows and all of my data. I've since realised that I want to separate my data from all the Windows files in case I ever need to reinstall my OS in a hurry. I'd like to partition the drive, but I don't want to trash all the existing data. Is there a simple way to achieve this?

Chris Rolfe

A There are various partitioning tools available that can help you achieve this, but it's worth making a backup of all your important data before you make any major changes. Partitioning a drive is, as you can imagine, a rather risky business.

Computers are generally sold with an OS preinstalled. In the majority of cases this is Windows, installed on a single partition on the PC's hard drive. The hard disk may also include a hidden recovery partition. This is created because it's easy for a manufacturer to set up one hard drive for each model and then clone it for each PC it sells. It's convenient for the vendor, but not always the best setup for the user. If you choose to stick with the default arrangement, Windows, your programs and your data are mixed on the same drive, and should you need to restore the computer to its original state, all the data that's not been backed up will be lost.

CARVING THINGS UP

Partitioning divides the hard disk into different parts that your PC treats as separate disks. It's a very useful technique for keeping data separated. You can set up different partitions when you install Windows — recent versions of Windows include partitioning programs in their installers. However, partitioning at this stage destroys all data on the disk. If you want to preserve your existing data and Windows installation, you'll need to use a non-destructive partitioning program.

Parted Magic (**www.partedmagic.com**) is a dedicated Linux-based Live CD that you can use to carve up your disk. You need to burn the ISO image to a CD to make a bootable disc, then start your computer using that disc. The program enables you to resize existing partitions and make new ones. You'll also find various data recovery tools on this disc.

Burn the Parted Magic ISO file to disc using your disc-burning program. You'll need to use the 'Burn ISO file to disc' option for this to work properly. Boot from this disc and press 1 when the Boot menu appears. Once your PC has loaded up, you'll see a simple desktop. Double-click the 'Partition Manager' icon in the bottom-left corner of the screen to launch GParted. This will interrogate your hard drive and display a diagram of all its current partitions. You may see one or more recovery or utility partitions that weren't originally visible in Windows — these are likely to be no bigger than a couple of gigabytes and are usually best left alone.

Select your main partition and choose 'Resize/Move'. Change the size of this partition to make room for a new one for your data and click 'Resize/Move' again. Select the newly created space and click 'New', then choose 'Extended partition' and click 'Add'. Click 'New' again and then again to create a logical partition using the NTFS filesystem. Give it a label and then click 'Add', then 'Apply' to make the change.

It will take a while to resize the partition, especially if there's quite a lot of data that needs to be moved. Once the process is complete, reboot your computer into Windows. You can now move all your data from your C: drive to whatever the new logical drive is in Windows.

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WINDOWS VIEW

Going virtual

How to unleash the power of Windows Virtual PC.

APC EXPERT



JAMES BANNAN

James Bannan is a systems manager at St Leonard's College (Vic) and *APC*'s resident Windows expert.

Windows Virtual PC was released in October 2009 and was almost completely overshadowed by the public release of Windows 7. Additionally, Virtual PC was seen more as the foundation of Windows XP Mode, one of Microsoft's attempts to mitigate application compatibility problems and facilitate quicker business uptake of Windows 7. In so far as it did attract industry attention, Virtual PC ended up being seen as simply a means to an end, rather than a major application release in its own right.

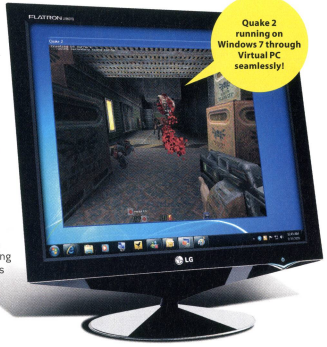
The previous offering from Microsoft in the area of desktop virtualisation was Virtual PC 2007, which, when compared against competitors like VMWare and Sun Virtualbox, was looking distinctly outdated and lacking in functionality. The latest release — while its focus is still very much on virtualising only Windows operating systems — is a powerful and flexible virtualisation solution.

Although only the Professional, Enterprise and Ultimate versions of Windows 7 come with the bundled Windows XP licence needed to run XP Mode, if you have any pre-existing Windows licences then you can use them in hosted VMs. This offers the opportunity for developers and IT pros to run multiple environments on the same system, while taking advantage of the many client/host integrations that Virtual PC supports, such as USB/smart card, printer redirection, folder sharing, clipboard sharing and application publishing.

Application publishing makes use of the Remote Desktop protocol. Virtual machines are powered on but run in the background with no open application window, but published applications are integrated into the host Start Menu and streamed onto the host desktop. This functionality is available for all supported guest operating systems — it's not unique to XP Mode.

The hardware requirements to run Virtual PC are minimal, but the host system must be running Windows 7 and have a CPU with hardware-assisted virtualisation enabled (AMD-V or Intel-VT). Depending on the number and size of virtual machines in operation, RAM can quickly become a bottleneck, so 4GB is a recommended minimum, which necessitates a 64-bit host. Supported guest operating systems are Windows XP, Vista or 7, but must be 32-bit. This is a limitation not imposed by competitor products. Other operating systems like Windows Server (full and Core) or Linux distributions can be made to function, but do not support the full range of client/host integration features. Basic Linux integration is possible using the Linux Integration Components for Hyper-V, which is available as a free download from Microsoft.

Another aspect of Virtual PC is its use as a platform for legacy games. If you have some older games kicking around that worked fine on Windows XP but not on later operating systems, it is possible to install them on an XP virtual machine and stream them out to the Windows 7 desktop. Microsoft's Ben Armstrong (aka. The Virtual PC Guy) has a number of articles dedicated to the trials and joys of virtual gaming, so check it out for some ideas, as well as a load of tips and tricks for enhancing your Virtual PC experience. If you decide that it's all too much effort but still want to resurrect those old games, head over to **www.gog.com**, where a large range of titles have been remastered for full compatibility with Windows XP and Vista, which means that they should run fine on Windows 7 as well. TIP



LINUX WINDOW

Tweaking made easy

While Windows has a plethora of third-party tools, Linux doesn't have quite the same scope.

Perhaps it's because a majority of its users are quite familiar under the hood, or perhaps because there's less to play with (or, at least, obviously exposed for all but the bearded-gurus among us) but there is just one definitive tweak tool — Ubuntu Tweak. And it makes sense that this tool is tailored around Ubuntu, as this is by far the most popular distribution that appeals to Windows users making the switch and, in so doing, might like to tweak and change Ubuntu in ways that aren't immediately apparent to the end user.

We've actually covered Ubuntu Tweak before, but it's now reached a stage of maturity that it can be considered all but an essential application for every Ubuntu desktop. So if you're not already using it, here's how to install it and a quick guide of its most useful features.

ADDING THE REPOSITORY

You can install Ubuntu Tweak as a one-off application, or instead have its repository added to your install, and thereby have it automatically upgraded with each new release. To do this click System > Administration > Software Sources, then click the Other Software tab followed by Add. Enter the following:

```
http://ppa.launchpad.net/ubuntu-tweak-testing/ppa/
ubuntu karmic main
```

This is the 'unstable' version, which gets updated more frequently. If you prefer to stick with milestone releases, use this one instead:

```
http://ppa.launchpad.net/tualatrix/ppa/ubuntu karmic
main
```

Select to refresh your sources when you click Close, then open up a terminal and install it with:

```
sudo apt-get install ubuntu-tweak
```

Or search for 'tweak' in Synaptic and install it from there. Once installed launch it from Applications > System Tools.

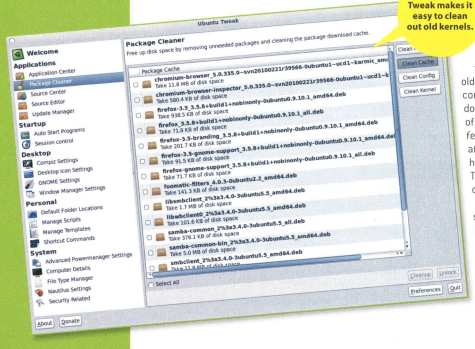
UBUNTU TWEAK TOUR

One new feature for Ubuntu Tweak is regularly updated application and sources lists. The first time you click on Application Center and Source Center you will be prompted to download the latest lists from Ubuntu Tweak's servers, which is naturally a good idea.

And here lies one of Ubuntu Tweak's strengths: installing applications that can't be found in Ubuntu's repositories. A good example of these include Google's Chromium browser, Sun's VirtualBox, XBMC, NVIDIA VDPAU (covered in last month's Open Source Challenge), Dropbox, Skype and Firefox 3.6 (as Canonical won't update Firefox to 3.6 until Lucid Lynx).

To install these click on Source Center then Unlock. Select the repositories you want to add, then click Refresh. Then click Application Center and you should find new applications showing up (for example, Chromium under Browser, after adding Chromium Browser Daily Builds from Internet in the Source Center).

There is plenty to explore in Ubuntu Tweak, but I'll direct your attention to two other very useful features. Under Auto Start Programs you'll be able to toggle which programs run at boot-up, much like Window's auto run. There are usually a number of services you probably don't need, such as the Bluetooth Manager or Power Manager, both of which you're not likely to need unless you're on a notebook.



Ubuntu Tweak makes it easy to clean out old kernels.

The second is the Package Cleaner. Under this option you'll find four cleaning tools to remove old and out-of-date packages, cached packages and configuration files from your system. This is good to do in order to free up disk space after doing a number of upgrades, but specifically the Clean Kernel feature you'll find is a boon: you may have noticed after numerous kernel updates that your boot menu has become polluted with various kernel versions. This tool will allow you to remove old kernels and clean up the boot menu at the same time.

There's a lot more in Ubuntu Tweak than there is space to cover here, so to find out more head to the homepage at **ubuntu-tweak.com**. EOTC

APC EXPERT



ASHTON MILLS

Editor of the *Linux Pocketbooks* series, and now with *CHOICE* magazine, Ashton has been a tech journo for over 13 years, including five years with *APC*.

iPOD

Publish iPod nano videos to YouTube

Create home movies from your iPod nano footage using the free Windows Movie Maker.



APC EXPERT

JENNETH ORANTIA

An expert on all things mobile, Jenneth Orantia has been writing reviews and tutorials on smartphones for the last seven years. Her current phone of choice is the iPhone 3G, but she's also well-versed in Windows Mobile, Symbian, Palm and BlackBerry.

Following suit from the iPhone 3GS, the latest fifth-generation iPod nano now includes a VGA video camera for recording short movie clips. Unlike the iPhone, however, the new iPod nano doesn't include any video editing features, nor can you upload the finished clip directly from the device.

But the iPod nano's video recording capability does have some merits over the iPhone 3GS, mainly in its ability to apply special effects to the video before you commence shooting — a feature that's not traditionally found on pocket camcorders or phone video cameras. The iPod nano includes 15 funky effects that you can access by pressing and holding on the centre button when the video camera is active, including X-Ray, Film Grain, Kaleido and Twirl, making even the most mundane footage look interesting.

But how about when you've finished recording your masterpiece? iTunes doesn't provide any facility for editing video clips, so you'll need to resort to a third-party program for editing and publishing the final movie.

To transfer the video clips from your iPod nano to your desktop, right-click on the Windows Start menu and select 'Open Windows Explorer'. In the side-panel on the left, select the name of your iPod nano (under Computer) and double-click DCIM on the right. All of your video clips will be in the 000Apple folder. Highlight the MPEG-4 video files (by pressing Ctrl and simultaneously clicking on the relevant files) and drag them to your Videos folder (under Libraries in left-hand side panel in Windows Explorer).

You can quickly make a movie using a handful of video clips and a background song using the free Windows Movie Maker on Windows Vista or 7. To start, launch the Windows Movie Maker application (usually found under the Windows Live folder in the Start > All Programs menu) on your PC. Click on the 'Add videos and photos' button at the top of the window and browse to the video clips that you transferred from your iPod nano. Select the clips that you want to use (you can select more than one by pressing Ctrl while you're clicking on the file names), then click Open. Thumbnails for the clips that you selected will appear in the main window of Windows Movie Maker.

If you don't want to spend too much time editing the movie, the AutoMovie feature (accessible from an icon in the menu bar) will automatically group the clips together, add title and credit screens, and include a background song. If you've got photos that you'd like to include in the movie as well, the AutoMovie feature will add pan and zoom effects to them, as well as transitions and cross-fades between each of the video clips and photos. Once AutoMovie has worked its magic, press the Play button on the left-hand side to see the final movie.

Making changes to the auto-generated movie is easy. To change the text on the title or credit screens, double-click on the thumbnail of the screen on the right and then click inside the main view on the left — a text box will appear where you can change things like text, text colour, text font and background colour.

To publish your movie on YouTube, click the YouTube logo in the menu bar (accessible from the Home tab). You'll be required to log in to your YouTube account and specify details about your movie such as its title, description and category. Alternatively, if you want to save the movie to a DVD, click on the menu button (next to the Home tab) and click Save movie > Burn a DVD.



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OPEN SOURCE CHALLENGE

Roll your own Linux distro

It used to be that you needed lots of time and technical nous to make your own Linux distro. That's no longer the case.



APC EXPERT

ASHTON MILLS

Ashton has been using Linux since Slackware came on floppies, and before that he was one of the three people in the world who used OS/2 (and loved it). Always ready to make the most of his PCs, he is constantly playing with Linux distributions and compiling the latest kernel. This is his idea of fun, and why we get him to write for you.

In the past, to make your own Linux distro you needed to start with a base like Linux From Scratch, then pick the applications and features you wanted. The results weren't a cohesive whole the way distros like Ubuntu are made, but it could certainly be something you could call your own. Now however, thanks to Novell and its SuSE Studio product, you can roll your own distro in little more than half an hour.

Naturally, this will be based around SuSE, which is formulated around RPM packages, as opposed to DEB that Ubuntu uses. This won't matter unless you intend to build your own packages, as the studio works by letting you define the binaries you want to include for everything from X Windows and NVIDIA drivers through to GNOME, KDE, OpenOffice and a whole lot more. You can build your own tailored distribution as small as a console-only boot CD to a full-featured DVD. And, after creating an account, you get a nice 15GB to store your creations online too.

WORKING IN THE STUDIO

Currently SuSE Studio is in beta and invitation only; you can request an invite by heading to **www.susestudio.com/login**. New invitations are being issued every week, so it shouldn't take too long to get one. Once you get invited, you can tie it into your Novell, Google or Yahoo! account.

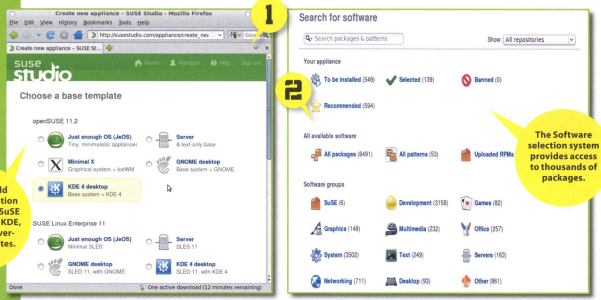
Starting a new build is as simple as logging in at **www.susestudio.com** whereupon you'll be greeted by the create new appliance page — here you can choose to make a build around the desktop or enterprise targets for SuSE, and in either 32-bit or 64-bit architectures. There is also an 'Additional templates...' link that will take you to some third party templates, such as for building a LAMP (Linux, Apache, MySQL and PHP) server. This includes, helpfully, options to build SuSE installs with cutting-edge KDE and GNOME desktops.

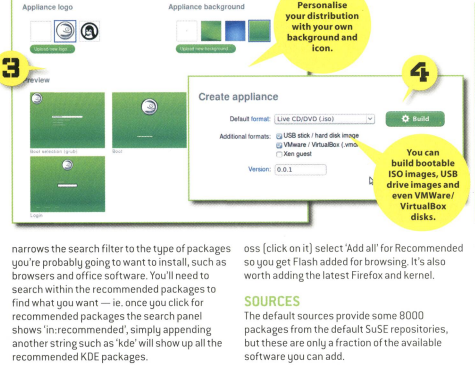
1 Once you've picked your basic template, you enter the main building process structured as five tabs along the top of the page — Start, Software, Configuration, Overlay Files and Build. You'll spend most of your time in Software, and this where the Studio really shines.

The page is divided into three sections: Sources, Selected Software, and Search for Software. If you're familiar with Ubuntu think of sources as repositories, from which you can then search for software to add to your distribution, after which it will show up under the selected software packages.

The basic template starts off quite bare, and if you intend to make a *useable* distribution you're going to need to add some essential packages, or preferably 'patterns' as the Studio calls them (pre-defined selection packages, such as 'KDE' for all the packages required for KDE.)

Helpfully, under the search for software section, there is a search pattern called 'Recommended software'. This





narrows the search filter to the type of packages you're probably going to want to install, such as browsers and office software. You'll need to search within the recommended packages to find what you want — ie. once you click for recommended packages the search panel shows 'in:recommended', simply appending another string such as 'kde' will show up all the recommended KDE packages.

As noted, however, an easy way to install the essential packages for a particular group or application is to use patterns. So, rather than manually select all the required KDE packages you can instead clear the search bar (click on the 'X') and then select 'All patterns', followed by appending KDE in the search bar, or alternatively directly type in 'in:patterns kde'.

2 Now it gets a little complicated. The patterns select the necessary packages, but not necessarily the optional but related packages. If you've searched on KDE as above you'll see 'kde4' as a pattern, but clicking on it will show a pop-up detailing the base packages that will be installed and a 'Recommended software' heading. If you like what you see in this click the 'Add all' button next to it. Below this there is a 'Suggested software' list, and you can optionally add all these too.

As you add packages, the sidebar on the left will automatically update with both the install size and the compressed image size, which can be a helpful gauge if you want to make an image that fits on a CD (640MB or less).

That's the basis for software selection; spend some time browsing for and selecting your favourite programs.

As a minimum, in addition to the default selected patterns, we recommend adding the following: enhanced_base (and add all recommended in this), console (if you're a console junkie), file_server (if you want to connect to SMB shares, or alternatively search for 'in:recommended samba'), and under non_oss (click on it) select 'Add all' for Recommended so you get Flash added for browsing. It's also worth adding the latest Firefox and kernel.

SOURCES

The default sources provide some 8000 packages from the default SuSE repositories, but these are only a fraction of the available software you can add.

At the top, under Software Sources, click on 'Add repositories...' and you'll be presented with a rather long list of optional sources you can use — some 80 pages' worth! For every source you add, new or updated packages will be available when you search in patterns and packages.

A great one to try, for example, is the kernel repository. Afterall, this is your own distribution build, you might as well grab the latest kernel at the time instead of using the (now out of date) default selection from the SuSE sources right?

To add the latest kernel to your selection type in 'kernel' and then add 'kernel_backports'. Now, under the software selection section, searching on 'kernel' will show results from the new sources. From here you can select 'kernel_desktop' to get a desktop-optimised version (remember to remove 'kernel_default' too). To add the latest Firefox 3.6, search on 'mozilla' and add the Mozilla Factory source, then search on 'mozilla' for under packages.

CONFIGURATION

This tab has a number of sections, and they're a breeze to use. Starting with the default locale, language, network and user selections (add at least one user) it moves onto Personalize where you can give your distribution a unique splash screen for bootup and login, or choose a SuSE default. You can also upload a logo, and it will be superimposed onto the splash screens.

3 The Startup section allows you to set if it will boot directly to the GUI or not (runlevel 5), while the Server section allows you to set up PostgreSQL and MySQL databases, including adding records from the get-go.

The Desktop section allows you to specify which programs auto-start at login and then the Appliance section lets you specify some of the more interesting features of the Studio — memory and disk sizes for VM images, disk image size for USB appliances, and whether you'd like your new distribution to be bootable as a live CD/DVD. Finally, the Scripts section lets you add scripts to run at bootup.

BUILDING

The Overlay files tab allows you to add non-distribution files to the final build, copied across after installation. Finally, the Build section allows you to put it all together into a downloadable ISO — or alternatively, raw image for a USB stick or even a virtual disk for VMWare and Virtualbox. You can build all three if you wish and download them at your leisure.

4 But why wait? The Studio actually lets you launch your new images in a virtual machine over the net — the server will load the image and display the output in your browser. It's not fast, but you'll be able to instantly tell if you missed anything important (eg, if the image doesn't boot!) and then go fix it without sucking up your bandwidth quota.

This is just a quick tour of the Studio, but it's a brilliant idea and very well executed. If you're only remotely familiar with Linux applications, you can quite easily build a distribution — albeit based around SuSE — that exactly meets your needs quickly and easily. That you can customise and personalise to a degree as well is just icing on the cake.

SuSE is a close runner-up to Ubuntu in terms of ease of use for the desktop, although some would say it supersedes it. Certainly, if you haven't tried SuSE before, you might as well build your own custom version of it, if only because you can. LXF

RECONSTRUCTOR

A less visually appealing alternative is Reconstructor (*build.reconstructor.org*). The software selection system is a little more archaic — builds start off bare so you'll need to add X11, Gnome, browsers, utilities and so on to get a bootable system — but in its favour you can start a build around a Debian or Ubuntu. A range of modules allow you to add specific features, like custom boot menus and repositories, or to add a default homepage to Firefox. Built images stay available for seven days and can be made public via project pages so others can download them.

IN THIS ISSUE

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AUTOMATION

Automate your PC

Mike Williams shows you how to save time, cut PC hassles and boost your productivity with the powerful scripting tool AutoIt.

WHAT YOU'LL NEED

AUTOIT TOOLS

The AutoIt development environment provides everything you need to create, edit and compile scripts. You'll find it at *http://tinyurl.com/2ruvw7*. While you're there, grab a copy of the full AutoIt Script Editor, too — it has some extremely useful macro recording features that we'll be needing later.

Owning a PC is supposed to save you time, at least in theory: the computer takes over the simple, repetitive tasks, leaving you to get on with more important matters. But in practice, it doesn't always work out that way. Many PC users follow the same routine every day, running the same sequence of programs, issuing the same keystrokes and performing the same tedious maintenance tasks, step by laborious manual step.

Sound familiar? Then you need a way to automate these processes, making your PC life a little easier. A scripting language that's more powerful than batch files, yet remains simple and accessible to everyone, expert and novice alike. A free tool that can run programs and simulate keypresses and mouse clicks to take the manual hassles out of just about any tedious task, and all in simple EXE files that you can share with others — no bulky runtime environment required. You need AutoIt, one of the best free PC automation tools around.

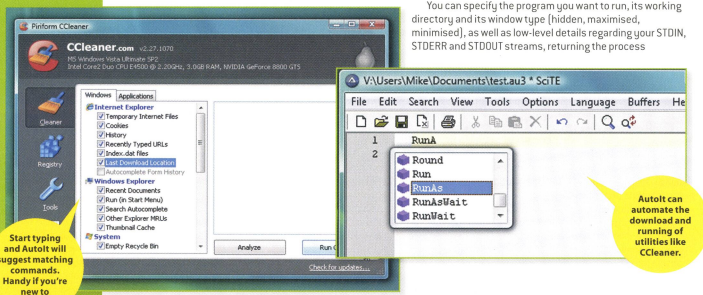
GETTING STARTED

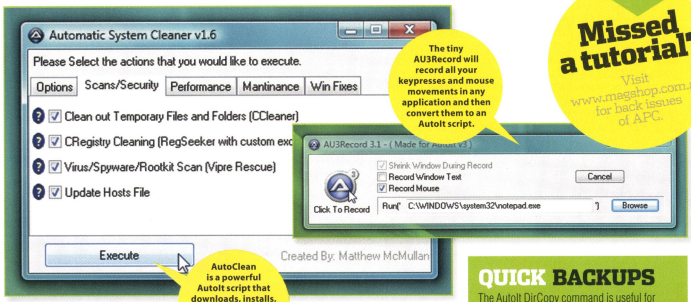
AutoIt scripts start life as simple text files with AU3 extensions, and the easiest way to build them is with the SciTE Script Editor that comes bundled with the package. It understands the AutoIt language, so if you type 'RU', for example, then it'll display the first AutoIt function that begins with those letters: Run, which is used to launch programs. Press Tab and it'll enter that function for you, then add a parenthesis — Run(— and it'll display information on the function options, and how they should be used. (See the online documentation at **http://tinyurl.com/43lkd** if you need more details.)

At first glance these functions can seem very complicated. The full syntax of the Run command, for instance, looks something like:

```
$PID = Run( "program" [, "workingdir" [, show_flag[, opt_flag ]]] )
```

You can specify the program you want to run, its working directory and its window type (hidden, maximised, minimised), as well as low-level details regarding your STDIN, STDERR and STDOUT streams, returning the process





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identifier as a result. Gulp.

Don't panic, though. Everything but the program name is totally optional, so in fact launching a program can be as simple as typing: 'Run("Notepad.exe")'.

If the executable isn't in the current Windows path then you'll need to tell Windows exactly where to find it. That's easy, too — just type in the following for Office: 'Run("C:\Program Files\Microsoft Office\Office12\Winword.exe")'.

It's actually really simple, then, although maybe not suitable for every occasion. The Run command simply launches a program and moves on to the next line of your script, so if you've specified five programs in a row then they'll all launch almost simultaneously, which may not be what you want.

If you want to launch Notepad and then launch a back-up tool to save your work after Notepad has finished, you might use a sequence such as this:

```
RunWait("Notepad.exe")
Run("MyBackup.exe")
```

The RunWait function launches a process, then waits until that process has closed before continuing. This ensures that your chosen programs appear in sequence rather than all at once.

AUTOMATING CCLEANER

Once you start having a go at this kind of scripting, all sorts of possibilities appear. If you've ever used the excellent hard drive cleanup tool CCleaner, for instance, then you'll know that you normally have to launch it manually, choose your options, click 'Run cleaner', confirm that you really want to delete files and so on. It's not all that difficult, but there are a few time-consuming processes involved.

However, if you launch CCleaner.exe with the /AUTO command-line switch by typing in 'Run("CCleaner.exe /AUTO")' then the program simply runs with its current settings, without bothering you with any prompts or questions. It just beavers away on its own, doing its work invisibly in the background.

Once you know about that, you can construct another AutoIt script to take advantage of this handy feature:

```
RunWait("C:\Program Files\Mozilla Firefox\Firefox.exe")
Run("CCleaner.exe /AUTO")
```

Launch IE from this script, and every time you close the browser it'll automatically invoke CCleaner to clear your internet tracks. That's convenient, but we can go one better. Consider the following:

```
Opt("WinTitleMatchMode", 2) $DoForever=1
While $DoForever=1 WinWait("Firefox")
WinWaitClose("Firefox")
Run("CCleaner.exe /AUTO")
Wend
```

The WinWait command tells the script to pause until it finds a window with 'Firefox' in its title (WinTitleMatchMode in the first line defines how that search is performed). WinWaitClose pauses the script until that window is closed, then launches CCleaner.exe. On hitting the Wend statement, it checks that the variable $DoForever is still 1, then loops back to the WinWait statement and pauses again until a Firefox window appears.

You could leave this script running all the time — once compiled it can consume as little as 2.5MB of RAM. It will detect when you've finished a Firefox session, then automatically run CCleaner to clean up, with no manual steps involved at all. (Use the AutoIt system tray icon to pause or close the script if you no longer need it.) The script is easily customisable — just change 'Firefox' to Chrome to detect Chrome browser windows, say — and the principle could be applied to many other situations, essentially any time you want to run a program automatically when another one has finished.

QUICK BACKUPS

The AutoIt DirCopy command is useful for quick backups. Using DirCopy("C:\Work","D:\Backups",1), for instance, will copy all files in C:\Work as well as all of the subdirectories and files below that (the complete folder structure) to D:\Backups. The last flag should be 1 if you want to overwrite existing files, or 0 if you don't.

SIMULATED KEYPRESSES

Being able to launch programs is useful, but it's actually just the first step in automating your PC. The next comes in controlling those programs or Windows services to make them do what you need them to do, something that AutoIt can do by feeding them simulated keypresses with the Send function, as follows:

```
Run("Notepad.exe")
WinWaitActive("Untitled -Notepad")
Send("The time and date is (F5)") Send("^p")
WinWaitActive("Print")
Send("!p")
```

Here we're launching Notepad and using WinWaitActive to wait until the Notepad window decides to appear. The script then sends the raw text 'the time and date is' before simulating pressing F5 to display the current time and date.

Using the ampersand symbol in a Send

COMPILE YOUR SCRIPTS INTO EXE FILES

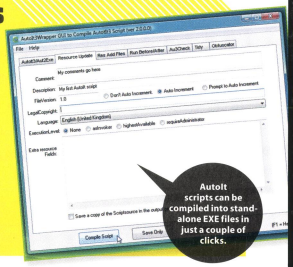
If you want to run an AutoIt script on your PC, you could simply double-click it. AutoIt associates itself with AU3 files, so it will pop up, process the file and carry out whatever steps you've defined.

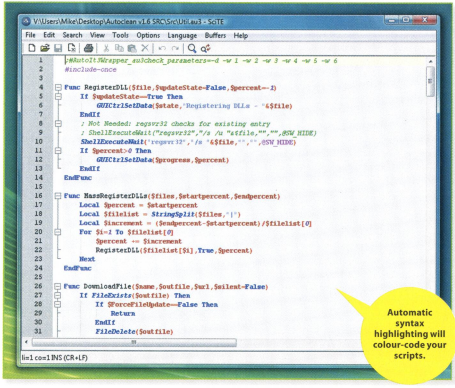
Occasionally you'll want to run a script on a system where AutoIt isn't installed. Luckily it includes a tool that can help by compiling your script into a stand-alone executable file. This will have no special dependencies, you don't need to have the .NET Framework or any other runtime files installed, and it should work on any system running Windows 2000 or later.

If you have a script open in SciTE then you can start the compilation process by clicking 'Tools > Compile'. Alternatively, right-click your AU3 file and select 'Compile with options'.

There are plenty of settings available to help configure your finished executable. If you want to give your new executable a custom icon, for instance, then click the 'Icon browse' button and select your ICO file. And if you click the Resource Update tab then you'll be able to enter a comment, description of your program, file version and copyright message, which will then be visible to users (right-click the file, select 'Properties > Details').

If you just want to create an executable file, though, simply click the 'Compile' button. In a matter of a few seconds, AutoIt will produce an EXE version of your AU3 script, in the same folder, ready for testing or sending to other people.





function simulates pressing the Ctrl key, so sending ^p is equivalent to pressing Ctrl+P. (Beware: case often matters, so ^p and ^P rarely have the same effect. Use lower-case letters unless you're sure upper case is required.)

The next WinWaitActive function waits for the Print window to appear. Finally, using an exclamation mark simulates the Alt key, so sending !p has the same effect as pressing Alt+P — which clicks the Print button.

You can apply the same principles to automate any application. Launch Internet Explorer, for instance — 'Run("c:\program files\internet explorer\iexplore.exe")' — then use Send ("!d") to simulate Alt+D, selecting the address bar. Add a URL and the Enter key — 'Send ("www.google.com{enter}")' and IE will access that site for you.

You can also automate some useful Windows keypresses. The '#' character represents the Windows key, for example, so you could use Send("#d") to simulate Win+D, which would minimise all windows and display the desktop. Another thing you could do is lock your PC from a script with Send("#l").

The Send function also supports special codes for simulating many alternative keypresses, including Tab, Page Up, Page Down, Numlock Off, Numlock On, Printscreen and a wide range of others (see the online documentation at **http://tinyurl.com/ygtxswx** for the full list).

DISABLE INPUT

Using the Send function in AutoIt will simulate keypresses, but if the user touches a key as well then your sequence will be broken. To prevent this, use BlockInput(1) before the Send function to disable mouse and keyboard input, then BlockInput(0) afterwards to enable it again.

MACRO RECORDER

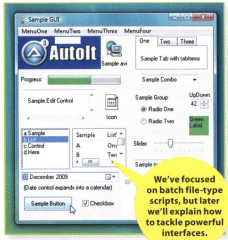
Send is an extremely powerful function, then, that will let you automate just about any Windows or application task. But getting it to work manually can be tedious, especially for long sequences. You'll have to take careful notes of each keypress you make, perhaps adding WinWaitActive or other statements to make sure your simulated keys go to the right place, and if you get it wrong then there's no telling what problems might follow. Fortunately, there's a simple alternative: use AutoIt's SciTE script editor to record the necessary steps for us.

To try this, first open SciTE, click 'File > Save As' and give your file a name like First Macro.au3.

Click 'Tools > Au3 Recorder' to launch the macro recorder. If you don't see an Au3 Recorder menu option, make sure you've downloaded and installed the full version of SciTE from **http://tinyurl.com/2ruvw9**.

Click 'Browse' and navigate to the program you'd like to automate. Pick something simple like Notepad.exe, MSPaint.exe or Calc.exe when you're getting started — these and many other Windows applets are generally in the \Windows\System32 folder.

Click the 'Record' button and Au3 Recorder will launch the application you specified, then



We've focused on batch file-type scripts, but later we'll explain how to tackle powerful interfaces.

begin recording your mouse movements, clicks and keypresses. Complete whatever steps you want to try — clicking '2+2=' in Calc, for example — then click the 'Au3 Recorder' button again to stop recording. It will immediately pop up a script representing everything you've done: a Run command, Send functions for any keypresses, WinWaitActive statements; everything we've seen so far, and mouse movements, too.

Does it work, though? Try it: close the application you've been automating if you've not done so already, then switch back to SciTE and press F5 to launch the script. You should see the program open and follow the sequence you've defined, in just a few seconds. It's all very straightforward and makes it much easier to start automating more complex Windows tasks.

AUTOMATED INSTALLS

The AutoIt commands we've looked at so far are very simple: run a program, send a keypress, wait for a window and so on. These aren't exceptions, either — the rest of the language is just as straightforward. If you needed to download a file within a script, for instance, you'd use a command like this: 'InetGet["http://www.domain.com/folder/file.exe","c:\downloads\file.exe"]'. This grabs a file from the remote URL, then copies it to the local path you specify. It even works with both FTP and HTTP servers.

The real value of AutoIt, though, comes when you begin to string these commands together. What if, for instance, you were to build a 'disaster recovery' script — something that you could use in case you suspected a malware infection? If you wanted to download a free, on-demand antivirus scanner to protect your computer, you'd normally have to go online, browse to the manufacturer's web site, follow the download link, locate the right version for your system and then download and install it.

With AutoIt, though, there's none of this hassle. You could use InetGet to download the latest version of a few antivirus tools — simply entering 'InetGet["http://security.symantec.com/sscv6/Setup.exe","c:\setup.exe"]' would get you Norton Security Scanner, for instance. A Run command will launch it, then you could use Send to simulate keypresses and step through the set-up wizard. That's easier — and probably quicker — than doing it all manually.

The excellent AutoClean script (**http://tinyurl.com/yge9pho**) takes this idea even further by creating a tool that can be used to fix broken or infected PCs. It automates the download and launching of great tools such as CCleaner, RegSeeker, Defraggler, Vipre Rescue and more, as well as automatically uninstalling common junk, optimising Windows settings and so on. Download a copy and browse the source to see how it's all done.

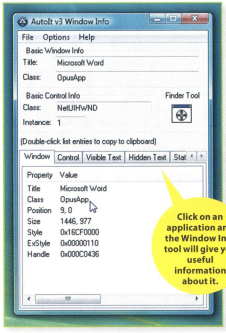
Next issue we'll take a look at automation that goes beyond keypresses, and explain how you can control key functions of Windows using just a few short and very simple AutoIt scripts.

CREATE ALERTS

AutoIt's MsgBox function is a flexible way to display alert messages. Entering the line 'MsgBox(0,"Alert","Something bad has happened",10)', for instance, displays 'Something bad…' in a message box titled 'Alert', then automatically closes the box after 10 seconds. See the official documentation at *http://tinyurl.com/yjbu9l7l* for more.

MORE INFO

If you can't wait for part two of this workshop and would like to explore AutoIt further right now, then point your browser at *http://tinyurl.com/yfxbtql*. The online documentation has in-depth details on all aspects of the AutoIt language, and it's the first place to look if you need any scripting help.

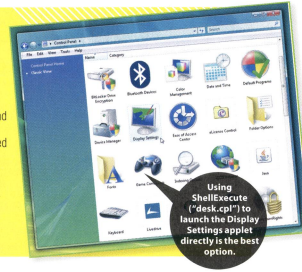


Click on an application and the Window Info tool will give you useful information about it.

MAKING SCRIPTS PORTABLE

It's easy to write AutoIt scripts to simulate keypresses that'll control operations on your PC. Ensuring they'll prove just as reliable on other systems is more difficult. You might write something to launch Control Panel, or Explorer, then send Tab keys to select the control you need. And it may work, too, but what happens if, say, you change from Classic View to Categories in Control Panel, or use some different view in Explorer? The keypresses you need to simulate an action may also change as you move from one operating system to another, or if you add or remove add-ons. You could find a script launches entirely the wrong dialog box, with potentially disastrous results.

Always think about portability issues when you create a script, then. If possible, avoid choosing anything by using Send to simulate a long sequence of keypresses — select it directly, instead. Don't use arrow keys to move around Control Panel — find the right command to launch the applet you need. In a dialog box, use shortcut keys to jump directly to the required control. Consider how things might change in other versions of Windows, especially if you're automating something like the Start menu. And think carefully before you use AutoIt to control anything that can harm your system, such as formatting drives — the risk of error may outweigh the benefits.



DIGITAL IMAGING

Print perfect digital photos

Matthew Richards helps you make the most of your printer to create brilliant photo prints every time.

WHAT YOU'LL NEED

AN INKJET PRINTER

Most modern inkjet printers are capable of great photo output. Canon, Epson and HP models with five or more inks give particularly good colour reproduction.

A DIGITAL CAMERA

We recommend an absolute minimum of three megapixels for full A4 borderless prints. Practically any modern digital camera will suffice.

While digital photography is essentially free once you've paid for your camera and memory cards, there's still a cost involved if you want to turn digital images into prints. Printing at home compares competitively with having your prints created by an online photo lab such as Photobox or Snapfish, especially once you take postage prices into account. But what about the quality?

In our tests, with a little careful preparation of your printer and close attention to the print settings, a modern inkjet printer (such as one of Canon or HP's five-ink models, or an Epson six-ink photo inkjet printer) is capable of producing better-quality photo prints than most online. You also get more control over brightness, contrast and colour into the bargain. Factor in the immediacy and convenience of photo printing right on your desktop, and you're onto a winner. But for home printing to be efficient, everything needs to be set up the right way.

CALIBRATE YOUR MONITOR

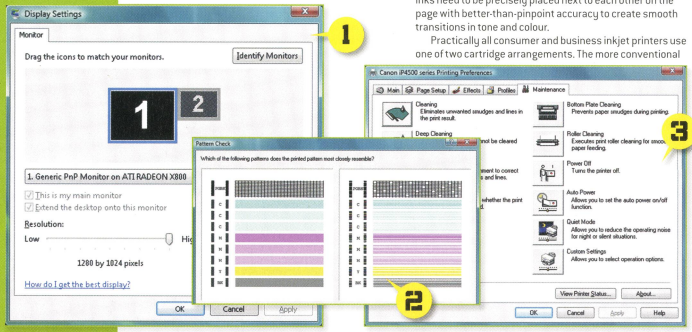
1 The first step is to adjust your monitor. To make monitors stand out in shop windows, many manufacturers bump up the default settings for brightness and contrast, meaning that what you see on-screen may bear little resemblance to what you get in print. First, ensure that you're using the maximum colour depth in Windows Display Settings (normally 24-bit or 32-bit), then go to the monitor's OSD (On-Screen Display) menu and select the sRGB colour setting if available. This should be a good match for your printer. If this isn't available, or if you want tighter control, switch to the 6500k or User Defined colour setting.

After switching off any auto image enhancement options in your printer driver, print a photo that has a good range of colour and plenty of detail in highlights and lowlights onto glossy photo paper. Now adjust the brightness, contrast and colour settings of your monitor until you find the closest match to the print.

ALIGN THE PRINT HEADS

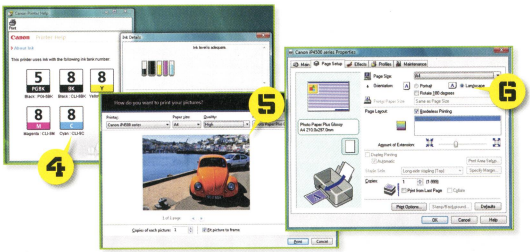
For a sharper image, it's important to ensure that your printer's print heads are accurately aligned. Some inkjet printers can print with resolutions of up to 9,600 dots per inch when using their highest quality settings, which makes photo printing an incredibly high-precision process. The need for accuracy isn't just for reproducing fine lines, subtle textures or sharp details: tiny droplets of different coloured inks need to be precisely placed next to each other on the page with better-than-pinpoint accuracy to create smooth transitions in tone and colour.

Practically all consumer and business inkjet printers use one of two cartridge arrangements. The more conventional



PAPER PATH

Many printers — including most of those in Canon's PIXMA range — feature dual paper input trays, with one built into the base and another at the rear. For photo printing, it's best to use the rear tray because this avoids the need for the paper to be tightly curled on its way through the printer. For printers where you have to put photo paper face-down in an underlying tray, ensure that the tray is as clean as possible, or put the photo paper face-down on a sheet of plain paper when loading.



method uses black and tri-colour cartridges with the print heads built in. These days, a more popular (and cheaper) method is to use print heads that are part of the printer, so the 'cartridges' are merely tanks containing coloured ink.

If your printer's cartridges have built-in print heads, you should carry out a head alignment every time you fit a new cartridge. Even if your printer has fixed print heads, it's still good practice to do this once every couple of months, to avoid any inaccuracies that can creep in over time. To do this, open the Printer Preferences or Properties dialog box and run the Print Head Alignment procedure from the Utilities or Maintenance section, simply following the on-screen instructions.

CHECK THE NOZZLES

2 Blocked print head nozzles are the curse of inkjet photo printing, ruining potentially excellent results with faint lines produced laterally across the print. To avoid wasting expensive ink and photo paper, carry out a nozzle check regularly. As with print head alignment, you'll find this procedure in the Maintenance or Utilities section of the Printer Preferences dialog box. Load the printer with plain A4 paper and start the routine, which will usually print a grid pattern of fine lines using each of the different ink colours. Check the results, paying close attention to any areas where lines or blocks of colour are missing, and run a head cleaning routine if required.

Many inkjet printers run a mini cleaning cycle each time the printer is switched on, so if you don't use the printer often it's a good idea to at least switch it on once every few days to reduce the risk of ink drying in the tiny nozzles of the print heads and causing stubborn blockages.

CLEAN THE PRINT HEADS

3 If there are any gaps in the nozzle check pattern, you'll need to run a head cleaning cycle. This process will attempt to clear any existing print head blockages by blasting ink through them. You may need to run the cleaning function two or three times to clear the blockages. If this doesn't help, find out if your printer has a 'deep cleaning' feature. This will use much more ink than the basic cleaning cycle, so only use it as a last resort. One trick that often works is to leave the printer for half an hour after you've carried out the basic cleaning function and then try again, because dried ink often gradually softens by itself after the first attempt.

CLEAN THE PAPER FEED

For high-quality photo printing, the paper transport system needs to operate just as precisely and smoothly as the print head mechanism. If it doesn't, sharpness will be degraded and fine or dark lines may be produced across the page. Paper feeding may be intermittent, irregular or fail altogether if there's a build-up of dust on the paper feed rollers. Luckily, many printers have a utility in Printer Preferences for automatically cleaning them.

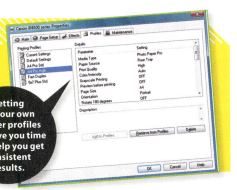
Another problem is that ink may be present on the bottom plate of the printer, especially after outputting large quantities of borderless prints (where a small overlap is printed off the edge of the page), or after repeated cleaning or deep cleaning cycles. To clean the bottom plate, fold a sheet of plain A4 paper in half, then unfold it again and load it into the paper input tray with the crease facing downwards (or upwards if the paper is flipped over as it passes through the paper transport path). Next, press the manual paper feed switch to send it through the printer. Repeat the process until the paper exits the printer with a clean crease.

CHECK YOUR SUPPLIES

4 A quick check on the printer's status will let you know if ink supplies are running low. In our experience, a printer maker's genuine ink cartridges are better than cheaper, third-party equivalents for photo printing, giving greater colour accuracy and fewer problems with nozzle blockages in the print heads. It's equally beneficial to stick with the manufacturer's own-brand photo paper, because the chemistry between ink and paper is specially formulated to give premium results

CREATE PROFILES

The need to adjust a wide range of hardware preferences for photo printing can make setting up your printer properly a time-consuming chore. It's also easy to forget one or two setting options, which can result in poor print quality and inconsistent results. One easy solution is to create printer profiles for tasks that you want to repeat often. After you've selected and adjusted all the options that you want to set for a task, switch to the Profiles section of the Printer Preferences dialog box and save the profile with a descriptive name. Doing this allows you to reproduce all the relevant settings with a single click in the future, cutting down on time and effort while keeping your prints looking consistent over time.



Setting up your own printer profiles will save you time and help you get consistent results.

along with resistance to fading. In some cases, third-party ink and paper supplies can result in noticeable fading after only a few weeks.

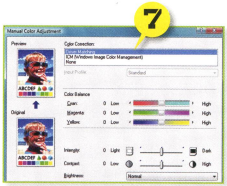
PRINT FROM VISTA

5 Windows Vista has handy tools for printing individual photos or groups of selected shots directly from their folders via the Print button in the main toolbar. For best results, it's important to set the correct paper type, because the amount of ink required can change considerably for different types of paper. You also need to set paper size and quality mode. The Standard photo quality setting generally suffices for 6 x 4in or 7 x 5in photos.

For premium A4 quality, it's best to switch to the High Quality setting, which may be referred to as Best or Max DPI mode. A checkbox at the bottom of the Vista Print dialog box labelled 'Fit picture to frame' is available for creating borderless prints, but ensure that the photo paper you're using is compatible with borderless output. This often isn't the case for canvas-style or photo rag papers.

FINE-TUNE THE SETTINGS

6 Whether you're using the Windows Vista photo printing function (a similar tool is also available in Windows XP) or printing from a photo-editing program, you can still access the



main Printer Preferences dialog box to fine-tune the settings. With Windows Vista, click the Options link at the bottom right of the Print Pictures window. You'll now have control over aspects such as how much extension is applied to borderless images, trading loss of picture area against the risk of white lines at the edges of prints.

Many inkjet printers also include Auto Optimisation or other enhancement features for correcting colour balance and exposure errors in images that have a colour shift or are too light or too dark. This can be useful if you're printing directly from a memory card or a PictBridge-compatible camera, but if you're editing images in a program such as Photoshop Elements, it's best to turn this feature off for the sake of predictable and accurate printing.

ADJUST COLOUR MATCHING

7 If colour matching seems consistently poor, there are usually various ways to correct it. For example, with popular Canon printers you can usually switch to Manual Colour/Intensity in the main section of the Printer Preferences dialog box, then choose between Driver Matching (default), ICM (Windows Image Colour Management) or no colour matching at all.

There are some additional options for adjusting intensity, contrast and brightness, and you can also tweak the colour balance in a couple of ways — by either increasing or decreasing any of the cyan, magenta and yellow printing colour components.

TRY SPECIAL EFFECTS

Many printers include optional settings to apply special effects, either through the printer driver or from their onboard controls and LCD menu/preview screens. The latter is particularly useful for direct printing from memory cards. As well as automatic optimisation, options often include illustration effects, monochrome choices for sepia or colour-tinted output and 'vivid' settings that boost colour and contrast. It's difficult to gauge the precise effects and strengths that some of these options produce, so it's a good idea to try small test prints first. ETTE

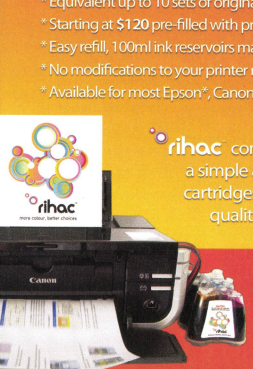
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STORAGE

Get the most out of Dropbox

Collaborate on projects, synchronise programs and more, all with one application. **Jamie Middleton** shows you how easy it is.

WHAT YOU'LL NEED

A PC RUNNING VISTA OR WINDOWS 7
We used a modern PC, but most of these functions will work just fine with older Windows operating systems and even Macs.

AN INTERNET CONNECTION
Dropbox relies on its connection to the internet to function, so make sure you're hooked up and online.

DROPBOX
Although you can access the service via the web at *www.dropbox.com*, it helps to have the associated client software installed. You can download it from the Dropbox web site.

For those not already familiar with Dropbox, it's an ingenious file-sharing and synchronising service that works across any operating system, including PCs, Macs and even the iPhone. Available from **www.dropbox.com**, you can set up a free account that gives you 2GB of storage space, or get a 50GB Pro account for US$9.99 a month.

Once installed, Dropbox appears as a folder called My Dropbox within your Documents folder. But this is no ordinary folder: whatever you copy into it is automatically uploaded to the Dropbox server. Install Dropbox onto another computer, log on using the same details and the files will automatically be downloaded onto that computer too. Leave it logged in and, no matter which machine you're using, whatever you update on your Dropbox will be saved on all your other devices as well. This means you can leave those easy-to-lose USB sticks at home and still have the most up-to-date versions of the files you're working on to hand, provided you've saved them into your Dropbox folder.

Even if you haven't installed Dropbox onto the PC you're working on, you can still access your files by logging into your account on **www.dropbox.com**, where they appear as files that can be downloaded from the site. (Bear in mind, though, that this method lacks the automatic synchronisation option and you'll have to remember to upload any files you've worked on back onto the Dropbox site yourself.)

SECURE SHARING

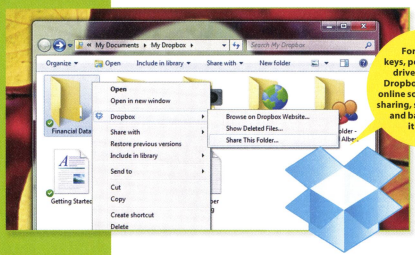
There's no need to be worried about security, either: Dropbox uses very secure AES-256 encryption over an SSL-encrypted channel to share and save your data. Just make sure you use a strong password! The only slight worry we can think of is the fact that you're entrusting your documents to a cloud-based app that, despite its burgeoning popularity, could disappear overnight. However, provided you also back up your files at home, this shouldn't be a problem.

The beauty of Dropbox lies in its simplicity. It just works quietly in the background. Even if you aren't online when you make changes to a file in your Dropbox folder, when you connect to the internet, Dropbox will detect the file changes and update the document. But don't be fooled by that simplicity — the app may only synchronise files, but people are using it in many different ways. From working on collaborative projects to hosting web sites and remote controlling BitTorrents, Dropbox's functionality knows no bounds. We'll explore a few of these possibilities here.

COLLABORATIVE PROJECTS

As well as sharing files across computers, you can use Dropbox to share files with other people. In fact, because Dropbox is so accessible it can often be a better solution than a network share. It also keeps a revision history, so you can see who added what and when — meaning that tracking the collaborative process is done for you automatically. You can even go back to previous versions of files and restore them if a mistake is made or a file is overwritten (see the 'Undo history' box).

Your Dropbox account lets you share files in two ways: with everyone in the world (by putting your file(s) into the Public folder in your My Dropbox folder) or with chosen individuals who can also add files to the shared folder. To share a folder with specific people, log on to the Dropbox site, go to the Files tab and click on 'Create a new folder'. Right-click on the new folder and choose 'Share this folder'. Next, send an email to the people you'd like to collaborate with. Those with Dropbox accounts will have the folder appear in their Dropbox if they accept the invitation, and those without are prompted to sign up.

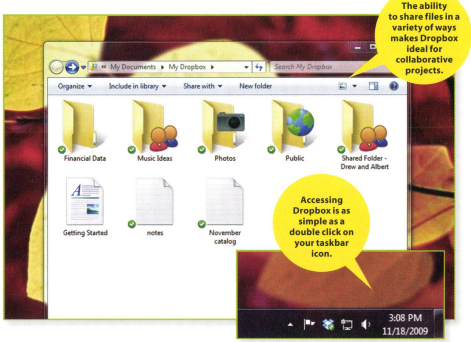


Forget USB keys, portable hard drives and FTP: Dropbox is a simple online solution for file sharing, synchronising and backup. And it's free!

Dropbox

UNDO HISTORY

Managed to delete an important document from Dropbox before realising you hadn't saved it anywhere else? Don't panic: Dropbox keeps a list of revisions you've made to your Dropbox folder and allows you to undo them. It saves 30 days of your history as standard (Pro accounts get an unlimited history). To get that all-important file back, you just need to log on to your online account, go to the Files tab, click 'Show deleted files', click on your missing file and press 'Restore'.



STORE ALL DOCUMENTS

Dropbox is all very well as a USB stick replacement, but you still have to remember to copy your documents into the My Dropbox folder. One solution is to keep the master files saved only in your Dropbox folder, but it can quickly become a mess of image files and documents. It would be nice to keep all your files in the folders you'd usually put them in, without having to copy them somewhere else for synchronising. Well, provided your Documents folder doesn't take up more than the storage space available in your account, you can put it into your Dropbox in its entirety.

To do this, right-click on your Documents folder, choose 'Properties' and move its location into your My Dropbox folder. This means you can carry on working as before, while having your entire Documents folder available wherever you go. However, in the unlikely event that Dropbox disappears, this means all your files could also be lost. Plus, should someone get access to your Dropbox account, they could delete it all (although the undelete function does mean you could get it back again). Provided you keep a regular backup of your files elsewhere, the benefits may still outweigh the possible costs.

SYNCHRONISE PROGRAMS

Wouldn't it be handy if the Firefox browser on your notebook had all the same user preferences, extensions, bookmarks and themes as your PC? Wouldn't it be satisfying if any changes you made to your Firefox profile were automatically changed on all the computers you worked on? If you have Windows Vista or 7, then with the help of Mklink you can do just that. The Mklink function is essentially a shortcut creator, where you can create a file that points or links to another file or directory on a different part of your computer. The difference with Mklink is that it creates these 'hard links' or 'symbolic links' at command-line level, so programs that wouldn't accept normal shortcuts can use them. Couple this power with Dropbox and now you can sync programs as well as files.

Take Firefox as an example. All your personal data (browser settings, bookmarks, history and so on) is saved as a profile, which is typically found at this location: C:\Users\[your PC name]\App Data\Local\Mozilla\Firefox\Profiles. Once you've ensured that Firefox isn't running, select this folder and copy it into your Dropbox, then delete the original folder. Open a command prompt (type cmd into the Search box on the Start menu) and type mklink.

You should see a series of the commands available to you along with a description of what they do. Now, using the 'J' command to create a directory hard link, enter: 'mklink /J %APPDATA\Local\Mozilla\Firefox C:/ dropbox/Firefox'.

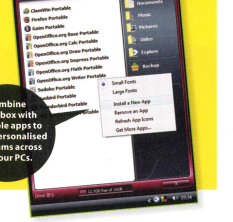
You'll need to change the address lines to where your Firefox profile and Dropbox are located. Repeat this process on all your PCs (you'll need to have administrative rights) and whatever you do to Firefox will now be mirrored wherever you go and whatever PC you use.

This basic process can be applied to any program you wish: you could store your Thunderbird mailbox on Dropbox to have your emails available everywhere, or use it to store your game saves so you never need to repeat a

PORTABLE SOFTWARE

You might not be keen on using Mklink to mess around with your computer at the operating system level to synchronise your programs between computers. However, if you still like the idea of having all your personalised settings and even emails wherever you are, there's a simpler way to do it. The open-source community has long experimented with running self-contained programs and even operating systems from USB keys, meaning you can carry around personalised versions of applications in your pocket.

Dropbox now does away with the need for a USB key, as these portable apps are also great for using with the service. There are a variety of free open-source editions of popular applications available. These are self-contained versions of programs such as Firefox, the Thunderbird email client and even OpenOffice.org, and because they don't install themselves in different places throughout your operating system but are kept together in one location (your Dropbox folder), you'll have your software wherever you go, tweaked to your tastes. For a list of free open-source software and freeware portable apps, see **www.portableapps.com/apps**.



GET MORE FREE SPACE

You get 2GB of free space when you sign up to Dropbox, but this can quickly be used up if you're using your Dropbox for multiple purposes. However, it's possible to more than double your space for free by referring people to Dropbox. For each person who successfully signs up, you're awarded an extra 250MB, up to a maximum of 3GB (12 people).

Dropbox has made it easy for you to refer people. After signing in, head to **www.dropbox.com/referrals** and you'll be given three options. The first lets you copy and paste a link to identify you as a referrer, which you can also post automatically to Facebook or Twitter by clicking the icons above your referrer link. The second allows you to invite contacts from your email account by logging into it and choosing which you'd like to receive your referrer code. Lastly, you can just type or paste in email addresses and send your code to them. You can see how your referrals are doing at **www.dropbox.com/account/referrals.**

A further 250MB is yours just for doing five of the six tasks listed at **www.dropbox.com/gs** (invite a friend, take the Dropbox tour and so on). Add all this together and you can get up to 5.25GB of space for very little effort.

level. See the 'Portable software' box for other ways to access personalised programs no matter what computer you're using.

STORE PASSWORDS SAFELY

Secure passwords are difficult to remember. That's why more and more people are using open-source programs such as KeePass (**www.keepass.info**) to manage their passwords. KeePass lets you generate long, complicated and unique passwords for each of your logins and remembers them for you. This means you only have to know one long secure password (for the KeePass login) to increase your online security exponentially. However, if you're on a different computer to KeePass then you can't find out what your password is and you can't log in to that essential site. The solution is to use Dropbox to store both KeePass and your password archive.

If you're worried about security, KeePass (and, for that matter, Dropbox) uses the same security that banks and the military use to send and store their data: AES 256-bit encryption. So provided your KeePass password is a secure one, a criminal won't get any joy from your archive file.

ENCRYPT YOUR DATA

Are you still worried about how secure Dropbox is, despite the site's many assurances? Do you want to synchronise sensitive data across all of your computers? By using APC favourite TrueCrypt (**www.truecrypt.org**), you can create an encrypted drive that's accessible from any computer. This is a file of a fixed size that looks like a normal file but acts like a drive partition. You can hide other files within the volume of this file and it disguises their size and the data that they contain.

To add TrueCrypt protection to your Dropbox, download the program from **www.truecrypt.org/downloads**, double-click on the '.exe' file and choose to extract it to your My Dropbox folder. This puts the portable version of the app into your Dropbox.

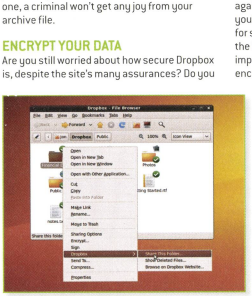
To create the encrypted file, open the 'Truecrypt.exe' file and click on the 'Create a volume' button. Choose 'Create an encrypted file container', then 'Hidden Truecrypt Volume' and lastly 'Normal Mode'. Give your file partition a name, choose AES encryption, set the size of the file (the outer volume) and create a username and password. Any encryption is only as strong as your password, so choose a long, complicated one. Now click 'Format'. You need to do the same again to set the inner partition size — where you'll put your files. You also need to leave room for some decoy data, which is placed between the inner and outer volumes to give the impression that this outer layer is the real encrypted drive. Choose a very different password for the inner volume so it isn't compromised if the outer layer is accessed.

To open your partition, start TrueCrypt, click on 'Select File...', choose your file and click 'Mount'. After entering your password, you can drop files in here to encrypt them. Note that it's best only to access it from one machine at a time to prevent conflicts.

PORTABLE DROPBOX

There are still some situations where it may be useful to carry Dropbox itself around with you — say, if you can't install Dropbox permanently on a public PC that you use often. Step forward DropboxPortable, which is available at **http://tinyurl.com/yaathn8**. Once you've successfully installed it, you can get access to your Dropbox files from pretty much anywhere you fancy.

So, why not carry the files on a USB stick instead of a portable version of Dropbox? Well, imagine you need a work file you haven't put in your Dropbox, such as an image for a presentation. If you've shared a folder with a colleague then they can drop it into your shared Dropbox folder — so when you plug your USB stick into the computer at your destination it'll be downloaded automatically and end up sitting on your USB stick waiting for you. This means that you can be on the train to a meeting while your presentation is having the finishing touches added to it back at the office.







IN THIS SERIES

Ash Nallawalla continues his Masterclass, focusing on online marketing. The series will cover online advertising, web site monetisation, network marketing, blogging for profit, affiliate marketing... and more!

APC EXPERT



ASH NALLAWALLA

Ash Nallawalla manages natural and paid search traffic for some of Australia's largest web sites. He is an internationally acknowledged expert in search marketing and he runs an online SEO training web site. Ash can be contacted at **ash@melbpc.org.au** or via his blog at **www.netmagellan.com.**

WHAT'S NEXT?

PART 8
MAY 2010
LINK BUILDING AND SOME NEW TOOLS

PART 7 ONLINE MARKETING

SEO toolchest: keyword search

All the tools to help you research the search terms that users are typing into search engines.

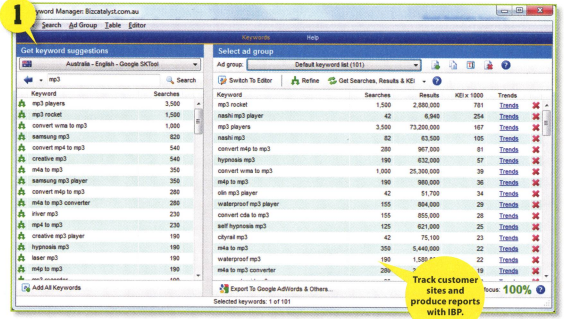
Words are the currency of search engines. Using the right words — keywords — if you will — will make the difference between success and failure.

Many business web sites are built with little awareness of search engine optimisation (SEO), at least when it comes to the written content. For now we will ignore the sites built entirely in Adobe Flash, as they cannot be optimised to the same extent as a regular HTML site.

Traditional copywriters have a difficult hurdle to cross when writing for the web. Their natural tendency is to write catchy headlines and paragraphs, without holding back on superlatives and puffery. Often the client expects this.

Consumers, on the other hand, are unpredictable when they type a query in a search engine. Although search engines are getting better at interpreting user intent, they have to use the literal text supplied by the user. The same two or more words when placed in a different order can result in a different search engine result page (SERP).

I once came across a page featuring "Apartments — Serviced". As this is a competitive niche, it does not appear when searching for "serviced apartments". When a user searches for "nails", were they expecting to buy artificial nails, have a manicure, or a hardware store? Google presumes fingernails, not the hardware variety.





KEYWORD RESEARCH

There are various situations when you will need to perform keyword research that helps you understand what people are typing in their searches and how you should maximise your SEO for it. One example is that you're an affiliate marketer who will sell anything that makes money. You may need to do extensive research to find a good niche, then perform detailed research within that niche to build the web site.

We will look at some tools that will help keyword research. Some of these tools have other powerful features, which we will cover in a later article.

IBP

Internet Business Promoter, from Axandra, is better known by its contraction IBP. Nearly all SEO companies buy its Business Edition, which enables them to track customer web sites and brand the reports with their own logo. Others who use the Standard Edition get the same features except for the ability to produce customised reports.

1 IBP includes a checklist to make your SEO projects successful. Step 1 helps you to find the best keywords. The IBP approach can be summarised as follows:

- Choose the right keywords. A plastic surgeon will feel compelled to use *rhinoplasty* in the body text, but if a potential client searches for *nose job*, the two may never meet.
- Keywords used for comparing are the ones to target for SEO because people use such words to find a solution to their needs.
- Keywords can be for browsing, for comparing or for buying.
- Avoid selecting single words or phrases longer than four words. Single words rarely convey the user's intent, but four words indicate the urgency of the search to find the best solution.
- Study competitors but don't assume that they are using the best keywords.

2 I run the IBP Search Engine Ranking report regularly to monitor about 250 keywords. This process takes a few hours to complete because I have to slow down the SERP checks to no more than one process at a time and with a delay of at least 10 seconds between checks. This is part of "human emulation", which cannot be ignored, or else you will get a Captcha from Google for every search for the rest of the day. Yahoo! Search will block your IP address if you use it rapidly for more than 1,000 searches. Ranking checks are useful not only to measure the results of SEO activity but to analyse their performance for competitors.

IBP comes with a comprehensive 335-page eBook that covers how to perform SEO in a structured manner.

URL: www.axandra.com/go.to/ibp9

MARKET SAMURAI

Market Samurai is the proverbial Swiss Army Knife of research tools and it is made in Melbourne by Noble Samurai. It is aimed at the affiliate marketer, but for this article we will only look at its keyword research features.

3 Market Samurai takes a pragmatic look at keyword research. Most keywords have little to no traffic; therefore, you should find the ones with significant traffic. Traffic alone is not enough; you need keywords with commercial intent. They are the ones that will convert to a desired action, be it a sale, a trial signup or completion of a lead form. Not surprisingly, most of these converting keywords are extremely competitive and their web sites are optimised to the hilt. Therefore, a tool such as Market Samurai can help you to find the hidden nuggets.

Market Samurai identifies Four Golden Rules of keyword research:

- Relevance: Find keywords relevant to the content of your site.
- Traffic: Targeted traffic is better than lots of traffic.
- Competition: The level of competition must be acceptable but not too high.
- Commerciality: The keywords must be highly commercial.

The keyword research tool first lets you eliminate irrelevant phrases as negative keywords. You further refine the list by selecting positive keywords — ones that contain a specific word of interest. You can also eliminate by phrase length, for example, single words and phrases longer than four would be a good strategy for most situations.

Sometimes you may see an unusual phrase that you might be tempted to use simply because Google has found it for you.



This could lead to a costly, wild-goose chase if you built a web site around this phrase.

Market Samurai coined the term SEO Traffic (SEOT) to suggest the number of visitors a #1 ranking site could expect in a day. It has determined 80 to be the threshold for useful keywords, so you can filter out low-traffic potential phrases.

It also coined Phrase to Broad Match Ratio (PBR) to eliminate misleading keywords that may come up in a Google Keyword Tool result. By generating permutations of a phrase and comparing the number of searches for each permutation, it can help you eliminate misleading phrases that have a low PBR.

Sometimes all keyword permutations have a low PBR. This indicates a missing word in the phrase, which can happen in an unfamiliar niche. You want to find phrases with a high PBR.

To determine an adequate but not excessive level of competition, Market Samurai defines SEO Competition (SEOC) as the total number of web pages that mention a keyword in the same word order. Choosing a threshold of 30,000 pages is an adequate level of competition.

To determine commerciality of a keyword, Market Samurai takes the SEOT and multiplies it by the Google AdWords Cost Per Click value. It calls this the SEO Value (SEOV). This becomes another filter for eliminating phrases below a certain value. The Market Samurai web site has a wealth of useful resources for the online marketer. The user guide is presented as a list of video tutorials in a virtual Dojo, with nine dedicated to keyword research. Full transcripts are also included. You can download a free trial that gives you full functionality for 12 days, but thereafter the keywords tool and all the videos are available even if you don't buy.

URL: http://marketsamurai.com/c/apc

GOOGLE ADWORDS KEYWORD TOOL

The Google AdWords External Keyword Tool is aimed at Google advertisers, but SEOs and copywriters can also benefit from it. You can select local Australian results as an indication of which terms are popular. It also tells you when certain related keywords and other terms are popular.

4 Affiliate marketers will benefit from the search volume trend data because they might not know whether an unfamiliar niche has a seasonal pattern or is popular all year round. The graph of advertiser competition is a clue to a keyword's popularity, but bear in mind that intense advertising occurs when organic ranking is keenly contested, so this is a clue that organic ranking could take a lot of effort.

You can use it by setting the locality to *Australia* and entering one or more keywords. When I entered *seo outsourcing*, I discovered that *seo outsource* got more searches in Australia, so a copywriter would need to work that phrase into the copy. If I were writing for a global audience, I would take note that *seo outsourcing* got more searches than *seo outsource* and adjust the copy accordingly.

I could also use one of the related keywords such as *seo company* on the basis that a searcher who needs the outsourced service might search for *seo company*.

URL: https://adwords.google.com/select/KeywordToolExternal

GOOGLE TRENDS

5 Google Trends is a free tool from Google for checking search volume trends over



time. You can look up one ore more search terms provided that there is a lot of traffic to those phrases. Google does not quantify this number. These short-term trends are useful if you want to make money on a paid search campaign for a day or two. For example, if one of the hot topics is some celebrity, then you could look at running an AdWords campaign for a few days to sell something related to that celebrity, such as an Amazon book affiliate link.

6 Google Trends can also help non-web writers and researchers to observe searcher behaviour over a number of years. For example, searches for *real estate* did not drop much during the financial crisis; however, searches for *bankruptcy* rose quite considerably last year.

URL: www.google.com/trends

GOOGLE INSIGHTS FOR SEARCH

Google Insights for Search is another tool for observing keyword search trends since 2004. If you were trying to monetise *surfboards*, for example, you'd be pleased to know that Australia has the most searches in the world, followed by New Zealand and the United States. The bad news is that *surfboard* searches have been declining steadily each year and in theory should stop completely within the next five years. Somehow I can't accept this, which suggests that all such findings should not be taken too literally.

7 You can explore related search terms and drill down any or all of them. It lists rising searches — in our example, *bing surfboards* are much more popular than *surftech surfboards*.

These Google tools are not useful with obscure searches that don't have sufficient search volume.

URL: www.google.com/insights/search/#

GOOGLE SEARCH-BASED KEYWORD TOOL

As if there aren't enough keyword tools from Google, the Search-Based Keyword Tool is for web site owners who already have a Google AdWords search advertising campaign. You are required to log into the AdWords account and the tool finds keywords that you are not using in your campaign.

These are based on search volumes for those suggested keywords. Each is linked to its Google Insights so that you can study its search interest over any period since 2004.

URL: www.google.com/sktool/#

CLUSTY

8 When researching an unfamiliar niche, Clusty can help by showing clusters of concepts similar to your search. This could help you to plan the structure of the web site or give you more ideas to explore later.

URL: http://clusty.com

KEYWORDSPY

9 KeywordSpy is a free online tool with paid options that lets you examine more than 10 keywords. Their main market is the PPC advertiser who would like to know what keywords are being targeted by competitors. The tool is particularly useful to affiliate marketers and professional SEO/PPC agencies.

URL: www.keywordspy.com/

There are many other tools that you could try but the key is not to draw hasty conclusions from the results. Take your own measurements as a sanity check and if they agree with the tool's findings, you can get on with the essential task of keyword research.

Next month we will take an in-depth look at link building and some new tools. EOTE

IN THIS SECTION

APC's **James Bannan** takes on the role of an SMB IT manager tasked with rolling out Windows 7.

IT MANAGER



JAMES BANNAN

James Bannan is a systems manager at St Leonard's College (Vic) and *APC*'s resident Windows expert.

PART 4 WINDOWS 7 SMB DEPLOYMENT

Windows 7 SMB deployment

In this part we look at using PowerShell to manage Windows 7.

WHAT YOU'LL NEED

The sections covered in this article follow on from last month's, in that they assume that you have access to a workstation with MDT 2010 and the Windows Automated Installation Kit (WAIK) already installed. You also need to have created a deployment share, imported an operating system and created a deployment task sequence.

As you progress with Windows 7 testing and deployment, you'll have noticed that PowerShell crops up quite a lot. What is it? PowerShell is a management and automation engine that consists of a command-line shell and a scripting language. It's built on top of the .NET Framework and also provides access to the Component Object Model (COM) system as well as Windows Management Instrumentation (WMI) on both local and remote systems.

OK, that's great, but what does it mean for you as a Windows administrator? Well, PowerShell allows you to gather rich information and manage your Windows environment — client machines, servers, applications and Active Directory — in an extremely flexible and powerful way. It's also bundled into pretty much every Microsoft product rolling off the production line. For example, the WAIK and MDT 2010 tools that we've been using to deploy Windows 7 leverage strongly off PowerShell (particularly MDT 2010), and additionally, applications like SQL Server 2008, Exchange 2007 and System Center Virtual Machine Manager 2008 R2 are all manageable via PowerShell, which gives you an unprecedented ability to unify your management environment.

PowerShell has actually been around for some time (it was first shown to the developer community in 2003) but it's taken some time to make an impact with IT pros. Its first inclusion in an OS was with Windows Server 2008, where PowerShell 1.0 was an installable feature and available as a download for Windows XP/Server 2003/Vista. PowerShell 2.0 is included with both Windows 7 and Server 2008 R2.

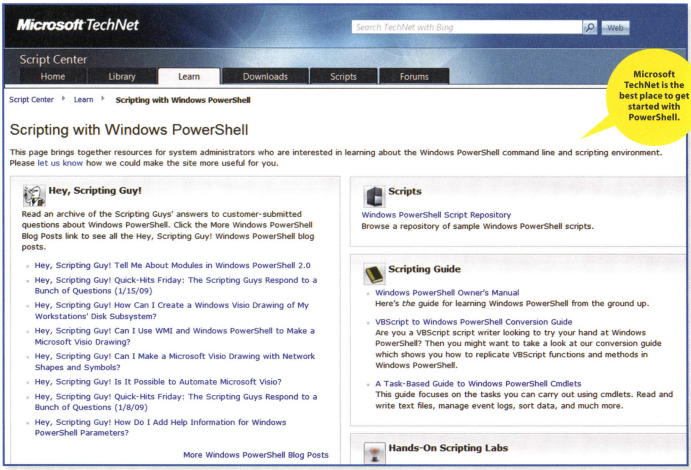
Sound good so far? Of course. But here's the bitter pill — PowerShell is much easier to use if you have some sort of coding experience or are familiar with programming languages. If, like me, your early Windows days were spent tweaking system memory so that you could play that latest game, then diving into PowerShell can be something of a rude shock. It *is* worth it though. Because PowerShell has a consistent presence across the Windows platform, it's really worthwhile getting to grips with because, as you'll see, it can be harnessed to do some really cool tricks that will make your life easier.

GETTING STARTED

If you're running Windows 7 then you've already got PowerShell 2.0 installed and active. If not, download and install the latest Windows Management Framework from **http://tinyurl.com/yfvbttg**, which includes PowerShell 2.0. To launch a shell window, simply go Start > Run > powershell.

The shell looks very similar to a standard command window, except the path has a 'PS' prefix and the window icon is different. In the window path you'll notice that the PowerShell executable has been launched from %SYSTEMROOT%\System32\WindowsPowerShell\v1.0. Don't think that this means you're running an earlier version of PowerShell — this path just maintains backwards compatibility. To see which version of PowerShell you're running, type 'get-host' in the shell and it will return some system information including the version. If you need to check the version outside of a shell window, open the registry with 'regedit' and navigate to HKLM\SOFTWARE\Microsoft\PowerShell\1\PowerShellEngine and check out the 'PowerShellVersion' string.

The shell window functions very much like a normal command window, and many of the standard commands like DIR, CD, IPCONFIG and CLS work as usual. UNIX-type commands like LS also work. PowerShell commands are handled by cmdlets (pronounced "commandlets") which are pre-configured .NET classes designed to perform a particular function. There is quite a decent embedded help feature, which you can access by typing in 'Get-Help'. A good way to get started is to type in 'Get-Alias'. This displays all the aliases for the available cmdlets,



simultaneously presenting you with a list of cmdlets, which is useful. To get help about a specific cmdlet, for example Get-ChildItem (which is also the LS command), type in 'Get-Help Get-ChildItem'. This gives you a description of the cmdlet, links to the online help and related cmdlets. You can also type in 'Get-Help Get-ChildItem –examples' for some examples of usage and syntax.

Although the cmdlets use upper and lower case, PowerShell is actually case-insensitive. You can also use the TAB key to autofill a command or scroll through the available options. For example, type in 'get-h' and then hit TAB a few times, and the command will scroll through the available cmdlets that begin with 'Get-H'.

PIPING MULTIPLE CMDLETS

PowerShell cmdlets can be strung together into longer queries, and information gathered by one cmdlet can be piped to another for further manipulation. This logic lets you as an administrator gather the information you're interested in and present it in a useful format. A good example to illustrate this is to gather information about the files and folders in a specific directory. Normally you'd use the DIR command, using option-based switches like 'DIR *.DOCX'. With PowerShell you could type in 'Get-ChildItem *.docx' or 'ls *.docx'. To search the current path and all subfolders, type in 'Get-ChildItem . –include *.docx –recurse'. Assuming there are documents available, this command will produce a result, but the output can be quite messy, especially if there is a large number of results returned.

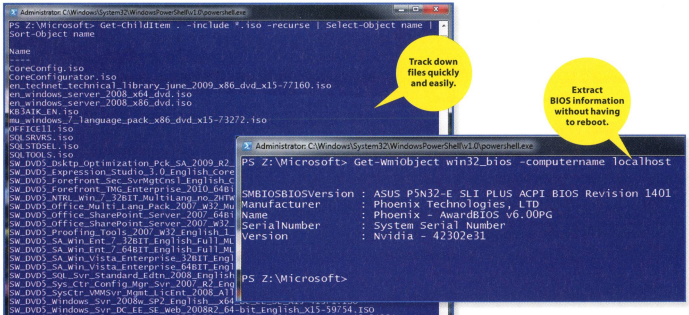
To start changing the way in which you receive results, try piping the command to another cmdlet, in this case Select-Object. Try 'Get-ChildItem . –include *.docx –recurse | Select-Object name'. The '|' symbol serves as a break in the query, takes the output produced by the first cmdlet and then pipes it to the next one. In that example, the Select-Object cmdlet took all the Get-ChildItem results and extracted all the name information, so that the results just returned the filenames.

Taking it a step further, type in 'Get-ChildItem . –include *.docx –recurse | Select-Object name | Sort-Object name'. This takes the previous output and sorts it alphabetically, whereas 'Get-ChildItem . –include *.docx –exclude h*.* –recurse | Select-Object name | Sort-Object name' is the same as the previous query, but will exclude all files beginning with H. Additionally, '(Get-ChildItem . –include *.docx –recurse).count' gives you a count of all the results instead of returning the actual names.

Finally, for something a little more sophisticated, try out 'Get-ChildItem . –include *.docx –recurse | Sort-Object name | Format-Table name,length', which outputs the results as a table with the name and length of each file, but sorted by name. For more permanent queries, you can also output the results to a text file, HTML, CSV or XML.

Because PowerShell integrates at many levels, cmdlets like Get-ChildItem aren't just restricted to browsing the file system. Type in 'Get-ChildItem registry::\hklm\SOFTWARE' and PowerShell will return the keys which exist at that level of the registry. Use the TAB key and the command will scroll through all the available options as if you were navigating any old file/folder structure. Because PowerShell can read the registry in real time, you can even make use of the New-PSDrive cmdlet to map a drive to a registry hive.

As you can see, even basic PowerShell functionality is pretty powerful, but before you can make use of all the options, you need to know what's available. Again, the help function is the place to look. As an example, 'Get-Help Sort-Object –full' gives you the full range of options for the Sort-Object cmdlet and how to use them. As there is too much information



to fit into one shell window, use Help instead of Get-Help, and the results will be broken up over multiple pages.

VARIABLES

When you're working with long queries, it can be cumbersome to have to re-type them each time. The shell session does maintain a command history, which you can scroll through using the up and down keys, but another useful trick is to create variables.

Variables are session-specific commands that let you arbitrarily define a query for later use. For example, the queries in the previous section were all variations on the initial search for DOCX files using the Get-ChildItem cmdlet. Given that, it makes sense to define the initial search as a variable, and then call on that variable in subsequent queries. To do this, use the following command '$search=Get-ChildItem . –include *.docx –recurse'.

This creates a query that you can call any time simply using $search. Now you can re-type one of the more complex queries, for example '$search | Sort-Object name', or '$search.count'.

Entering the variable name at any time returns the results of whatever query has been assigned to it. This is useful if you need to check that the original query actually did return something — it can be frustrating when troubleshooting a complex query, only to find that one of the variables in use was set up incorrectly. You can overwrite a variable simply by assigning a new query to the same variable name.

Although there are some reserved variables such as $pshome and $profile, you can create as many session variables as you like and chain them together across multiple queries, which can be a very flexible way of massaging data across different cmdlets. However, once you have run a saved PowerShell script or shut down a shell session, user-defined variables are flushed from memory.

WMI AND REMOTE MANAGEMENT

Because of its ability to use WMI classes, PowerShell lets you gather machine-specific information about local and remote systems and make certain changes. As an administrator this can be particularly useful — for example, you can query servers and extract BIOS version information, see which services are running (and restart them) or see which users are logged onto remote machines.

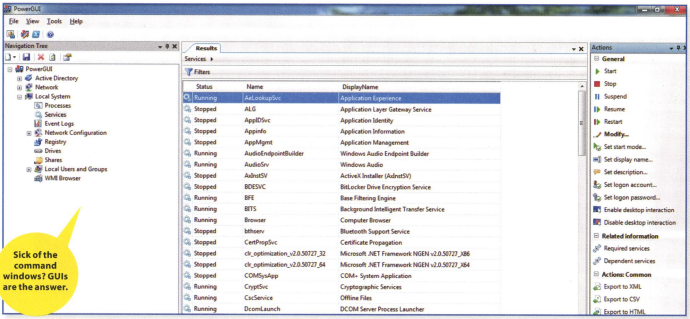
The Get-WmiObject cmdlet (alias is gwmi) handles WMI calls in PowerShell. Try some basic commands like 'Get-WmiObject win32_bios' to extract the BIOS information of the local machine, and combine with another cmdlet to get only the version data using 'Get-WmiObject win32_bios | Select-Object SMBIOSBIOSVersion'. To see which services are running, use 'Get-WmiObject win32_service –filter "state='running'" | Select-Object name'.

These queries can be used in all sorts of scenarios, such as verifying a service has been stopped before allowing an application to install, or checking whether a service is running on a remote server without having to log on to the system. Remote queries are embedded into WMI, so to action one of the previous queries, simply append '–computername name'. For example 'Get-WmiObject win32_bios –computername server001'.

When performing remote queries, system authentication and access rights come into play — you have to have rights over the remote system, or at least know the credentials of an account which does. If the previous script was run against a system to which the user logged on to the workstation did not have rights, PowerShell would return an access denied error message.

Fortunately, PowerShell lets you specify alternative credentials using the –credential switch 'Get-WmiObject win32_bios –credential SERVER001\Administrator –computername server001'. You will be prompted for the appropriate password as PowerShell does not allow you to store passwords in a script, as this is a major security risk. However, if you want to do a lot of work on a remote system using another account, the best method is t o save the credentials as a variable: '$cred=SERVER001\Administrator', type in the password when prompted, and then simply call the variable 'Get-WmiObject win32_bios –credential $cred –computername server001'.

In addition to credential, firewall policies come into play as well. When making remote queries against a Windows system, particularly Vista/Server 2008 or later systems, the appropriate firewall policies have to be enabled. This is less of an issue in an Active Directory environment, where firewall and server security policy tends to be centrally controlled, but it is a definite issue in a



workgroup environment, where individual systems are set by default to essentially trust nothing else on the network.

You can combine WMI and standard PowerShell cmdlets in the same query, so it would be possible to run the filesystem and registry queries we were running previously against a remote machine.

The query would be structured as follows: 'Get-WmiObject –class CIM_Datafile –filter "extension='docx'" –computername SERVER001'. To return just the base filenames, pipe the query to '| Select-Object name' or, using more WMI, define the original query as a variable ($query, for example) and then type in '$query | ForEach-Object { Write-Host $_.Name; }'. The Write-Host command is like the ECHO command in DOS — whatever comes next is output to the screen.

Of course, unlocking the power of WMI and PowerShell does rather depend on knowing what your options are. The Microsoft MSDN Library (**http://tinyurl.com/yevdaqa**) has a full WMI Reference catalogue detailing all the available WMI classes, which is more than enough to keep anyone busy.

GETTING STARTED AND FINDING HELP

Hopefully this article has convinced you that as a Windows administrator, PowerShell is something to get excited about. Having said that, for non-programmers like me, the world of scripting logic can be daunting, so it's good to know where to go to get your skills up and running, and where to go when you get stuck.

PowerShell has an incredibly rich partner and developer community, so there's plenty of information out there. In fact, possibly a bit too much. . . it can be bewildering at times. However, if you have a particular problem or you're trying to achieve a particular outcome, online searches will more often than not produce a result. After all, there are many admins out there trying to achieve similar things. From experience, to get the best results use cmdlet and class keywords in the search.

Microsoft TechNet and MSDN are very rich sources of information and help, including code snippets that you can pull apart and customise. The Microsoft Script Center (part of TechNet — **http://tinyurl.com/me29l5**) has a large repository of pre-built code, hands-on virtual labs, community links, cheat sheets and links to books and more documentation. It's also worthwhile joining an online community group like **powershellcommunity.org**, tracking down local user groups like the Australian PowerShell User Group, and searching online for some dedicated PowerShell blogs by developers, admins and PowerShell MVPs.

Often, learning a new technology is much easier with a graphical interface, and PowerGUI from Quest is a great place to start, as it lets you build PowerShell scripts easily and provides easy access to explore cmdlet options (it's also free, which helps).

In the next issue, we'll look at other free tools that Quest offer to make managing a Windows environment much easier with PowerShell, as well as looking at some of the other management tools available to help administer your Windows 7 environment.

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downtime

HIGH-PERFORMANCE PLAYTIME



TOMTOM CAR KIT FOR IPOD TOUCH

Now you can have a TomTom in your car without buying a TomTom. Well, not a traditional GPS anyway. You can now turn your iPod touch into a full functioning TomTom GPS device by purchasing the TomTom Car Kit for $129. The Kit includes an iPod mount, a car charger and the TomTom navigation app (v.1.2) to get you going. Once set up, users will have access to all the popular TomTom features such as TomTom IQ Routes, advanced lane guidance, spoken street names as well as emergency info and speed camera locations. Oh, and just in case you were wondering, you can still access your iPod's music via the TomTom's menu. Ahh, heaven. CZ

01

CONTACT TomTom
ONLINE www.tomtom.com
PRICE $129 for app and car kit

RAVON AUDIO i231 ALARM CLOCK

Looking more like a stereo from the '70s with its stainless steel fascia and big volume dial, Ravon's i231 offers more than retro good looks. It features a built-in alarm clock which enables users to wake up to their favourite tunes by setting the alarm time and track. A good-sized LCD screen makes navigation easy, whether it be accessing your iPod's playlists or tuning in a station on the FM radio with ten preset memory capability. With 20 watts RMS of power, the sound is good for its size. The fact that the speakers are housed in a wooden enclosure helps the sound quality and boosts the bass. Now we just need to agree on what to listen to. CZ

02

CONTACT Ravon Audio
ONLINE www.audion-nm.com
PRICE $329.95

CYBER SNIPA SILENCER

Gaming is a serious business that requires the right gear. The Silencer from Cyber Snipa is designed to be fully customisable for each user and each gaming situation. Up to 63 commands are recordable onto 9 gaming buttons to provide the user with up to seven separate gaming profiles. An adaptable weight system allows users to adjust the weight and balance of the mouse by removing one or more of the 6 inbuilt weights. Plus, the ergonomically designed interchangeable right hand support provides a good surface to grip and is very comfortable to hold. This should help avoid the inevitable hand cramps after hours of online gameplay. CZ

03

CONTACT Cyber Snipa
ONLINE au-webstore.cybersnipa.com
PRICE $120

BOOGIE BOARD LCD TABLET

Video killed the radio star, now LCD tablets have killed the chalkboard. Using the same Electronic Ink Technology as seen in eBook readers such as the Kindle, the Boogie Board is a 8.8 x 5.6in writing board which has its sights set on replacing notepads. The Boogie Board is a power friendly device that uses no power to write or draw, it only uses a small charge (via a watch battery) to 'wipe' the screen. The pressure sensitive, flexible panel incorporates a reflective layer which aids in visibility and does away with the need for a backlight, hence the power savings. We don't know if it will replace pen and paper but for only US$30 it is pretty cool. CZ

04

CONTACT Kent Displays
ONLINE www.kentdisplays.com
PRICE US$30



iLUV FABRIC CASE WITH CLIP – iPAD

05

The iLuv range has always been big supporters of everything Apple makes (as well as other handheld devices), so it comes as no surprise to see it has a range of iPad sleeves and covers ready to hit the shelves in time for the iPad's release. First off, we have the aptly named 'Fabric case with Clip', which is custom made to wrap around your iPad ensuring dust, minor impact and scratch-free protection. Made from durable fabrics and available in a choice of colours, the Fabric case also includes a screen protector to ensure that your valuable iPad touchscreen remains in perfect condition. For less than $50, it's a good investment. *CZ*

CONTACT	iWorld
ONLINE	www.iworldaustralia.com.au
PRICE	$49.95

STM SCOUT EXTRA SMALL

06

STM has jumped on the iPad bandwagon by introducing a range of notebook cases and shoulder bags that are suited for the iPad. These are cut down pre-existing lines of notebook bags and sleeves that have the perfect proportions for lugging around an iPad. The best of which is the Scout extra small. With high-density padding and a cushioned felt lining to surround and protect your iPad, the Scout also has plenty of extra space for all your other gear. The Scout offers sealed pockets with velcro closures and a large buckle for securing bulky goods. As well as looking good, the Scout is also comfortable to carry. Now all we need is an iPad. *CZ*

CONTACT	STM
ONLINE	www.stmbags.com
PRICE	$79.95

APPLE iPAD KEYBOARD DOCK

07

One of the first complaints that arose when the iPad was announced was how awkward it would be to type using a touchscreen. Apple seemed to have thought of this complaint ahead of time and released a keyboard dock on the same day it announced the iPad. The Keyboard Dock is both a dock for charging your iPad and a full-size keyboard. The dock has a rear 30-pin connector, which lets you connect to an electrical outlet using the USB power adapter, sync to your computer, and use accessories like the Camera Connection Kit. An audio jack lets you connect to a stereo or separate powered speakers for better sound. *CZ*

CONTACT	Apple
ONLINE	www.apple.com
PRICE	US$69

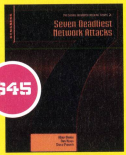
NEOPRENE SLEEVE FOR iPAD

08

If lugging your iPad around in a squishy websuit-like sleeve is your idea of cool, then the 'Neoprene sleeve for iPad' is just the thing. Available in a range of colours and patterns from the suave to the down-right girlie (see above) these Neoprene sleeves are designed to be resistant to rain and minimal amounts of water while also protecting your gear form minor shocks and bumps. The inside has a smooth finish to protect your iPad screen from scratches, while the exterior contains multiple pockets for carrying your phone and other gadgets. Although not as rugged as a full-sized bag, these sleeves do offer extra layer of protection. *CZ*

CONTACT	iWorld
ONLINE	www.iworldaustralia.com.au
PRICE	$29.95

Inprint
Tech books



$45

7 DEADLIEST NETWORK ATTACKS

elsevierdirect.com

This book pinpoints the most dangerous hacks and exploits specific to networks, laying out the anatomy of these attacks including how to make your system more secure. You will discover the best ways to defend against these vicious hacks with step-by-step instructions and learn techniques to make your computer and network impenetrable.



$68

INTRODUCING ZBRUSH 4

www.wiley.com.au

Introducing ZBrush 4 helps you to learn the ZBrush basics to help you get comfortable sculpting in a digital environment with this relaxed, friendly and thorough guide. Soon you'll be creating realistic, cartoon and organic models using meshes, organic sculpting, hard surface sculpting, textures, lighting, rendering and scripting.

Edifier On the Go IF350

The ghetto blaster for the twenty-first century!



$199

8/10

With the aid of a rechargeable battery source, Edifier gives its new IF350 iPod/iPhone dock the ability to hit the town with you. Reminiscent of the days of old, you can sling this baby over your shoulder and strut to your favourite tunes, but with 15 hours of listening time from one charge, we recommend a rest break at some point. The IF350's two 3in speakers have good tonal range and bass depth considering their size. Even the FM radio reception we picked up in the park sounded clear and sharp. A foldaway dock and a protective pouch make this a truly portable entertainment system. It's time to hit the beach! **CZ**

CONTACT Edifier
ONLINE www.edifier.com
PRICE $199

BLU-RAY PICKS OF THE MONTH



CONTACT Sony Pictures
ONLINE www.sonypictures.com.au
PRICE $42.95

2012

The end of the world has never looked so good! Based on theories surrounding surmised events, proposedly believed to occur when the Mayan calendar expires less than three years from now, *2012* sees the world torn apart by a rapid heating of the planet's core. When the Earth's crust starts to split, dumping whole cities and their inhabitants into gaping holes in the Earth, you can't help but feel awestruck, and a little bit nervous, at the realism depicted by the imagery on-screen. At nearly three hours long, *2012* is a film that will keep you so engrosssed that you won't even notice your bum going numb. **CZ**



CONTACT Sony Pictures
ONLINE www.sonypictures.com.au
PRICE $42.95

ASTROBOY

Created in the early fifties by Japanese artist Osamu Tezuka, Astroboy makes his big-screen debit in this slick adventure that breathes new life (pardon the pun) into this popular character. *Astroboy* is a surprisingly sad story of a robotic scientist (Nicholas Cage) who's son Astro dies in a work-related accident. Stricken by grief, he builds a robotic version of his son which comes fully loaded with weapons and defenses to ensure that no harm can come to him. Although made for kids, *Astroboy* has many dark elements intertwined with the comic action that will keep both adults the kids entertained. **CZ**



CONTACT Icon Pictures
ONLINE www.iconmovies.com.au
PRICE $34.95

PARANORMAL ACTIVITY

It's good to see a film of this genre that doesn't rely on blood and gore to engage the audience. *Paranormal Activity* is a rare horror film that is actually scary. It's a simple story in which a young couple find themselves being haunted by a demon which has followed Katie since childhood. In order to document these strange events, her partner, Micah, decides to set up his camcorder near the bed to find out what's going on. Shot in the same style as *Blair Witch* and *Cloverfield*, this mockumentary style gives *Paranormal Activity* a sense of reality that increases the film's tension and terror. Watch it with the lights on. **CZ**

Quikfix
New releases

GTA: EPISODES FROM LIBERTY CITY

Rockstar is giggling its silly, over-the-top arse all the way to the bank with the infinite potential for stories out of Liberty City. $69.95 lets players once again take to the sordid streets of Liberty City in two (one old, one new) stories. The Lost and Damned shows players the bleak and depressing life of a 1%-er while The Ballad of Gay Tony is a sequined romp through the perils of nightclub ownership, drug use and crime in the modern age. Fantastic, darlings.



ON THE LEVEL
The new Skirmish system is a treat, but there are still a few flaws in LOTRO land.

LOTR Online: Siege of Mirkwood

Troy Coleman shall not pass. . . the level cap.

Love them or hate them, MMOs are such a beautiful business model; a subscription-based product whereby players can sink unholy hours of their lives incrementally improving characters that exist solely in a virtual environment. WTB stocks?

Turbine's officially licensed Lord of the Rings Online has, in the past two years, developed and maintained a reasonably healthy share of the online marketplace and has just brought the second paid-for expansion to the table.

Everything you'd expect from an expansion is there; a level cap increase from 60 to 65 (in around 9 or 10 hours), new superb-looking landscapes, ample quests, deeds, traits and titles. For the raiders, there are three new three-person and a six-person instance that gate into a multi-boss twelve-person raid. As I mentioned, everything you'd expect. What is new, and super cool, is the Skirmish system. Players can create, tailor and improve their own personal 'soldier' — customised to a basic version of the healer, tank, archer or buffer classes — which can then be used to participate in private instances for barterable rewards.

One thing that is slightly concerning for the longevity of the game as a whole is the failure to address population problems and imbalance in the starter regions. What this does is develop a solo mentality in players early on which generally doesn't change in later levels. Turbine needs to maintain a multiplayer/grouping mantra.

AVAILABLE PLATFORMS
PC-DVD

CONTACT Turbine
ONLINE www.lotro.com
PRICE US$20 plus subscription

✔ Level cap increase; Skirmish system is great.

✖ Level cap is easily reached in a matter of hours.

VERDICT ★★★★☆

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■ Wireless upgrade module available

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■ Wireless upgrade module available



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Indepth
Ezio Peazio

HIDING IN PLAIN SIGHT

Evasion and hiding in plain sight have always been a prominent key to success in Assassin's Creed. The problem was that apart from environmental features like hay bales and seats, the remainder of the game world might as well have been pure decoration. Enter courtesans and local thieves. For a modest fee, these beauties and hoodlums serve as an on command distraction and means for Ezio to slip through/away undetected. On the 360, there's an Achievement for reaching a certain amount of money spent on courtesans, so be sure to treat Italy as your personal red light district.

THE VILLA

Early on in the game, Ezio makes his way to the Auditore family Villa, which has seen better days. Serving somewhat as a base of command, players can sink hard-earned Florins into the rehabilitation and restoration of the small town. Doing so earns Ezio discounts in the local stores as well as attracting tourism, which in turn makes more money… to spend on courtesans.





SANDBOX SUPREME
The core gaming experience hasn't been changed too much, but a number of improvements have been made.



TIME TO DANCE
"Stop! They're not spirit fingers! This is what I call spirit fingers!"

Assassin's Creed 2

There's nothing up **Troy Coleman's** sleeve.

It's been a couple of years since Desmond Miles parkoured and stabbed his way through medieval past lives as the assassin Altaïr ibn La-Ahad. And while I may have been a little harsh with my review two years ago, I'll feverishly maintain my stance on two specific issues: jumping back and forth from the past to the present never seemed to gel, and the fact that the end of the first Assassin's Creed was rubbish.

Patrice Désilets (Ubisoft Montreal Creative Director) and his code monkeys have unleashed another round of Assassin's Creed and for the most part, it's exactly the same as the first. This time Desmond discovers he has more than one Assassin past life and jumps into late 14th century Renaissance Italy as the petulant, rich and arrogant Ezio Auditore da Firenze who sparks up a spate of revenge killings in the name of his family. The core gaming remains exact: Ezio is more or less free to roam and explore the unbelievably stunning renaissance landscape at will and, as with all other sandboxy games, pick and choose which missions and side objectives to do along the way. What has evolved and excelled is the way the player interacts, blends and moves through the landscapes — especially crowds (see sidebox).

There are several historical characters to meet along the way too, most notably Leonardo da Vinci, who acts somewhat as a confidant to Ezio as well as an Italian Renaissance version of 007's gadget guy Q.

Aside from the camera perspective being annoyingly locked when in some confined spaces, there really isn't much in the way of technical faults to pick at in AC2. The sheer scale and absolute beauty of the game glazes over even the most critical eyes. This is what Assassin's Creed 1 should have been. Jump in, explore and enjoy.

AVAILABLE PLATFORMS
PC-DVD ~~PS2~~ PS3 XBOX 360 ~~DS~~

CONTACT Ubisoft Montreal
ONLINE assassinscreed.us.ubi.com
PRICE $109.95

✔ Stunning landscapes; blending and environment cohesion improved.

✖ Some horrible forced camera angles in confined spaces.

VERDICT ★★★★½



chipchat
BY PETER DOCKRILL

Re: FUIs, fyi

Ever wanted to know what the user interfaces of the future will look like, say, in ten, twenty or fifty years? The place to look is *the movies*, specifically, sci-fi movies. Think about it: whenever future cop is trying to track down future villain, what is he using? Inevitably, the answer is: future computer. Now one interesting fact about these fictional, futuristic OSs (as seen in movies like *The Island*, *Mission Impossible 3*, *Children of Men* and many more) is that a lot of them were designed by one fellow: Marc Coleran, a visual designer who specialises in FUIs or "fantasy user interfaces". His blog at **http://tinyurl.com/ygmb7el** shows off more of his work, and you can read more here: **http://tinyurl.com/yf36rom**. And while we're on the topic: anybody noticed how similar the iPad is to the tablet thingies the crew carry around in *Star Trek*?

iTREK?
Most movie computer UIs won't be seen in reality — although the iPad, in real life, strangely imitates Trekkie art...





LET'S GO LEGO
Building up your MMORPG guild has never been more literal. Grab your Lego blocks and hop to it.

Lego of your inhibitions!

Lego has undergone an interesting metamorphosis in the past decade or two: one which has taken it from the humble plastic building-block toy (with which every child is familiar) into some techno-fused, CGI-prone, gaming-focused, irony-laden future brand. The inevitable result of this development? Lego Universe. Scheduled to launch in the second half of the year, Lego Universe is a Lego massively multiplayer online game — basically it's a virtual Lego sandbox for ages eight and up. If you're considering defecting from WoW or LOTRO for a little brick-building time, bear in mind the kid-friendly angle of the gameplay, evidenced neatly by this question from the Lego Universe web site FAQ: "Can my parents limit how I play in Lego Universe?"

GIVES YOU WINGS
Gotta call to say you're late? Not to worry, drink your Red Bull battery and fly there quick smart.

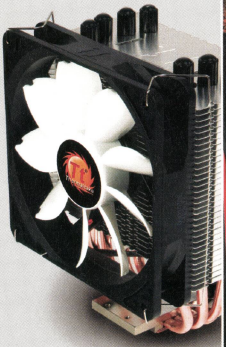


Run out of fizz?

The imminent adoption of a singular, non-proprietary cross-industry power charger for mobile phones can't come soon enough for us — but if, in the meantime, you really can't wait for a ubiquitous energy source for your mobile, why not try a soft drink-powered battery? Chinese designer Daizi Zheng came up with this prototype concept for a Nokia phone that runs on sugary liquid: just pour some Coke in and you're done — and it's environmentally friendly to boot. Plus, to quote Zheng: "Bio-batteries are a whole new way of looking at batteries and afternoon tea." More at **www.daizizheng.com**. apc

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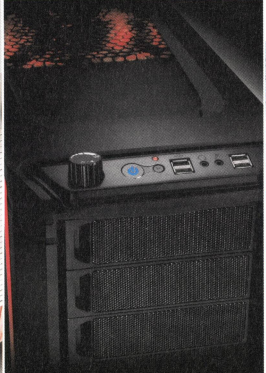
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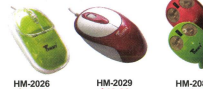
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FO-15CR	$ 44.00	$ 21.00

Epson Toner Cartridges

Model	Genuine	TONNY
EPL-5700/5800	$196.00	$ 49.00
EPL-5900/6100	$213.00	$ 49.00
EPL-6200	$163.00	$ 49.00
AL-C900/1900BK	$102.00	$ 65.00
AL-C900/1900C/M/Y	$220.00	$ 65.00
AL-CX11N/C1100BK	$107.00	$ 39.00
AL-CX11N/C1100C/M/Y	$164.90	$ 39.00
AL-C1000/2000BK	$124.00	$ 99.00
AL-C1000/2000C/M/Y	$249.00	$115.00

Panasonic Thermal Film

Model	Genuine	TONNY
KX-FA54E	$43.00	$18 Twin Pack
KX-FA55A	$43.00	$19 Twin Pack
KX-FA134	$82.00	$35 Twin Pack
KX-FA136	$63.00	$26 Twin Pack

Lexmark Toner Cartridges

Model	Genuine	TONNY
Optra E/E+	$ 142.00	$ 59.00
E120 prebate	$ 115.00	$ 55.00
E210	$ 162.00	$ 49.00
X215	$ 119.00	$ 49.00
E220 prebate	$ 135.00	$ 79.00

Model	Genuine	TONNY
E230/232/330/332	$ 129.00	$ 55.00
E310/312 (3k)	$ 185.00	$ 73.00
E320/322 (3k)	$ 162.00	$ 82.00
E321/323 (3k)	$ 162.00	$ 85.00
X342n (2.5k)	$ 145.00	$ 69.00

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Epson Ink Cartridges

Model	Genuine	TONNY
T028	$43.60	$ 4.40
T029	$39.10	$ 4.90
T038	$20.00	$ 5.00
T039	$28.40	$ 5.60
T0461	$22.00	$ 4.50
T0472/3/4	$14.90	$ 4.50
T0491/2/3	$21.00	$ 4.50
T0494/5/6	$21.00	$ 4.50
T0621	$22.00	$ 5.20
T0631	$16.00	$ 5.20
T0632/3/4	$15.20	$ 5.20
73N BK (T0731)	$17.00	$ 7.40
73N C/M/Y (T0732/3/4)	$17.00	$ 7.40
81N BK (T0811)	$27.00	$ 8.40
81N C/M/Y (T0812/3/4/5/6)	$27.00	$ 8.40
S020089 / T052	$35.10	$ 4.80
S020093/ T050	$29.00	$ 4.80
S020187/T050	$28.00	$ 4.80
S020189/ T051	$32.00	$ 4.80
S020191 / T052	$34.00	$ 4.80

Canon Ink Cartridges

Model	Genuine	TONNY
BX-3	$47.00	$23.10
BC-05	$59.60	$26.70
BC-20	$62.00	$22.90
PG-40	$34.00	$26.00
CL-41	$35.00	$26.50
BCI-3eBK	$22.70	$ 6.40
BCI-3eC/M/Y	$20.40	$ 5.70
BCI-6BK	$24.10	$ 5.70
BCI-6C/M/Y	$24.10	$ 5.70
BCI-6PC/PM	$24.10	$ 5.70
BCI-6G/R	$24.10	$ 5.70
CLI-8BK/pc/pm with chip	$22.50	$ 8.90
CLI-8C/M/Y with chip	$22.50	$ 8.90
PGI-5BK with chip	$22.50	$ 8.90
CLI-8BK no chip	-	$ 5.70
CLI-8C/M/Y no chip	-	$ 5.70
CLI-8PC/PM no chip	-	$ 5.70
PGI-5BK no chip	-	$ 5.70
BCI-15BK	$24.90	$ 6.10
BCI-16C	$40.70	$ 6.30
PG-510	$24.10	-
CL-511	$27.40	-
PGI520BK	$19.30	$ 8.90
CLI521BK/C/M/Y/GY	$19.30	$ 8.90
BCI-24BK	$15.30	$ 5.60
BCI-24C	$31.00	$ 6.90

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Kyocera Toner Cartridges

Model	Genuine	TONNY
TK-16H	$ 73.00	$61.00
TK-17	$103.00	$ 35.00
TK-18	$123.00	$ 38.00
TK-310	$130.00	$ 59.00
TK-510K	$ 98.00	-
TK-510C/M/Y	$172.00	-

Panasonic Toner Cartridges

Model	Genuine	TONNY
UG-3313	$242.00	$ 73.00
UG-5545	$242.00	-
KX-PDP8 Toner for KXP7100/7110	$136.00	$ 68.00

Lexmark Ink Cartridges

Model	Genuine	TONNY
18C0781A (#1)	$36.90	$24.60
10N0016 (#16)	$49.30	$18.40
15M0120 (#20)	$63.80	$24.00
10N0026 (#26)	$53.00	$23.00
18C0032 (#32)	$36.90	$21.30
18C0033 (#33)	$39.80	$23.10
18C0034 (#34)	$41.60	$25.00
18C0035 (#35)	$49.30	$27.00
12A1970 (#70)	$55.90	$21.00
18L0032 (#82)	$50.20	$26.10
18L0042(#83)	$62.60	$23.90

Brother Ink Cartridges

Model	Genuine	TONNY
LC-37BK	$25.20	$ 5.00
LC-37C/M/Y	$16.60	$ 6.50
LC-38BK	$24.50	$ 5.00
LC-38C/M/Y	$15.90	$ 6.50
LC-47BK	$34.60	$ 5.00
LC-47C/M/Y	$20.80	$ 6.50
LC-57BK	$34.50	$ 5.00
LC-57C/M/Y	$20.80	$ 6.50

HP Ink Cartridges

Model	Genuine	TONNY
C8727WA (#02BK)	$24.20	$11.00
C8771/2/3/4/5WA (#02C/M/Y/LC/LM)	$16.60	$ 8.20
C6615DA(#15)	$42.40	$14.10
C4936A (#18BK)	$30.00	$16.00
C3967/8/9A (#18C/M/Y)	$23.50	$16.00
C9351AA (#21)	$24.00	$16.00
C9352AA (#22)	$27.50	$21.00
C8727AA(#27)	$28.90	$14.10
C8728AA(#28)	$33.00	$22.00
51645A(#45A)	$44.70	$16.00
C6656AA (#56)	$30.60	$15.20
C6657AA (#57)	$48.90	$23.00
C6658AA (#58)	$38.90	$23.00
CC641WA(#60XL) BK	$45.00	$27.00
CC644WA(#60XL) Color	$51.00	$29.00
CB336WA(#74XL)	$44.80	$26.00
CB338WA (#75XL)	$49.80	$27.00
C6578DA (#78)	$48.80	$19.90
C9398A (#88 BK)	$49.90	$18.00
C9391/2/3A(#88C/M/Y)	$36.40	$14.70
C93662WA (#92)	$23.20	$14.70
C9361WA(#93)	$30.00	$16.90
C9765WA (#94)	$31.30	$16.90
C8766WA(#95)	$36.40	$16.90
C8767WA (#96)	$44.80	$16.90
C9363WA (#97)	$35.80	$16.90
C9364WA (#98)	$26.40	$15.80
C9369WA (#99)	$37.80	$25.00

Samsung Color Laser Toner

Model	Genuine	TONNY
CLP-300A BK	$ 95.00	$ 29.00
CLP-300A C/M/Y	$ 86.00	$ 29.00
CLT-409S BK for CLP-310/315,CLX-3170/3175	$ 74.00	-
CLT-409S C/M/Y for CLP-310/315,CLX-3170/3175	$ 63.00	-
CLP-510D7 BK	$153.00	$ 92.00
CLP-510D5 C/M/Y	$171.00	$ 92.00
CLP-600A BK	$131.00	$113.00
CLP-600A C/M/Y	$184.00	$119.00

HP Toner Cartridges

Model	Genuine	TONNY
Q2610A	$ 183.00	$ 55.00
Q6511X	$ 316.00	$ 69.00
Q2612A	$ 106.00	$ 45.00
Q2613A	$ 109.00	$ 45.00
C7115A	$ 95.00	$ 45.00
Q7516A	$ 276.00	$ 59.00
C4127X	$ 194.00	$ 59.00
CB435A	$ 95.00	$ 49.00
CB436A	$ 107.00	$ 49.00
Q1338A	$ 235.00	$ 85.00
Q5942A	$ 226.00	$ 95.00
Q5942X	$ 343.00	$105.00
Q5949A	$ 109.00	$ 49.00
Q5949X	$ 201.00	$ 55.00
Q7551X	$ 330.00	$ 76.00
Q7553A	$ 123.00	$ 49.00
Q7553X	$ 227.00	$ 59.00
Q6001A	$ 194.00	$ 59.00
C4092A	$ 90.00	$ 45.00
C4096A	$ 153.00	$ 59.00

HP Color Toner

Model	Genuine	TONNY
CB540A	$109.00	$ 75.00
CB541/2/3A	$ 99.00	$ 75.00
Q6001A	$116.00	$ 78.00
Q6001/2/3A	$126.00	$ 78.00
Q3960A/C9700A	$126.00	$ 65.00
Q3961/2/3A	$151.00	$ 65.00

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Brother Toner Cartridges

Model	Genuine	TONNY
TN-2025	$ 86.00	$ 49.00
DR-2025	$ 156.00	$ 62.00
TN-2150	$ 88.00	$ 49.00
DR-2125	$ 155.00	$ 69.00
TN-3060	$ 123.00	$ 49.00
TN-3185	$ 128.00	$ 49.00
TN-3290	$ 159.00	$ 49.00
DR-3215	$ 215.00	$ 89.00
TN-6600	$ 117.00	$ 49.00
TN-7600	$ 122.00	$ 49.00
TN-8000	$ 47.00	$ 16.00
TN-04BK	$ 257.00	$ 89.00
TN-04C/C/Y	$ 257.00	$ 89.00
TN-12BK	$ 139.00	$ 72.00
TN-12C/M/Y	$ 281.00	$ 105.00
TN-155 BK	$ 139.00	$ 89.00
TN-155 C/M/Y	$ 196.00	$ 99.00

Samsung Laser Toner

Model	Genuine	TONNY
SCX-4100D3	$123.00	$ 49.00
SCX-4216D3	$123.00	$ 49.00
SCX-D4200A	$123.00	$ 49.00
SCX-4521D3	$126.00	$ 49.00
SCX-D4725A	$123.00	$ 64.00
SCX-5312D6	$ 96.00	$ 70.00
SF-5100D3	$123.00	$ 49.00
ML-1210D3	$123.00	$ 49.00
ML-1610D2	$114.00	$ 49.00
ML-TD108S	$ 95.00	-
ML-D109L	$145.00	-
ML-1710D3	$123.00	$ 49.00
ML-2010D3	$113.00	$ 49.00
ML-2150D8	$219.00	$ 82.00
ML-2250D5	$144.00	$ 59.00
ML-D3050B 8k	$288.00	$ 86.00

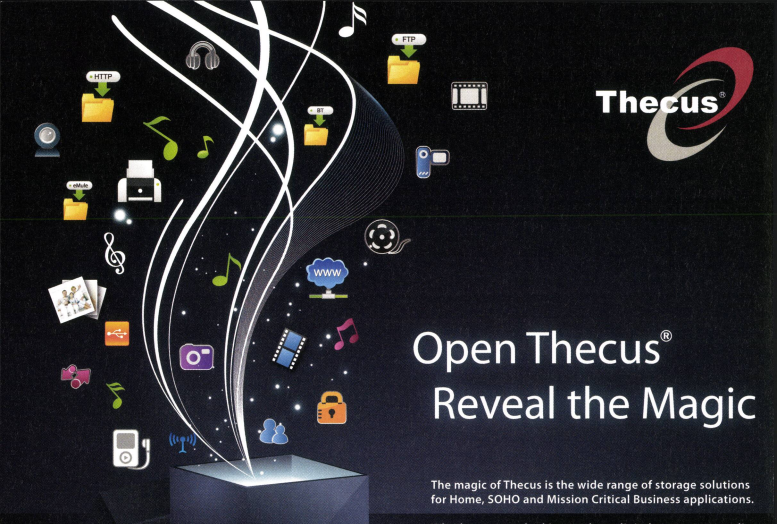
Canon Toner Cartridges

Model	Genuine	TONNY
CART 303(Q2612A)	$ 89.00	$ 45.00
CART 308(Q5949A)	$ 89.00	$ 49.00
CART 310 II(Q6511X)	$ 264.00	$ 79.00
CART 312(CB435A)	$ 81.00	$ 49.00
CART 313(CB436A)	$ 86.90	$ 49.00
EP-22 (C4092A)	$ 75.00	$ 45.00
EP-26	$ 99.00	$ 45.00
CART307BK(Q6000A)	$ 105.00	$ 78.00
CART307C/M/Y(Q6001/2/3A)	$ 105.00	$ 78.00
CART 301 BK (EP87 BK)	$ 125.00	$ 77.00
CART 301 C/M/Y (EP87CM/Y)	$ 140.00	$ 77.00
CART318BK	$ 155.00	-
CART311C/M/Y	$ 199.00	-
FX-3	$ 99.00	$ 45.00
FX-7	$ 120.00	$ 49.00
FX-9	$ 120.00	$ 49.00
CARTN	$ 231.00	$ 59.00
CARTU	$ 105.00	$ 45.00
CARTW	$ 149.00	$ 53.00
E-31	$ 195.00	$ 55.00

Konica Minolta Color Laser Toner

Model	Genuine	TONNY
QMS Magicolor 2300/2350 BK	$121.00	$ 69.00
QMS Magicolor 2300/2350 C/M/Y	$161.00	$ 69.00
QMS Magicolor 2400W/2430DL/2450 BK	$119.00	$ 85.00
QMS Magicolor 2400W/2430DL/2450 C/M/Y	$164.00	$ 85.00

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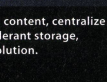
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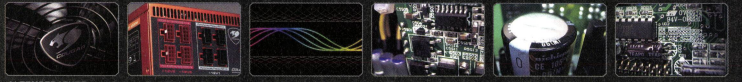
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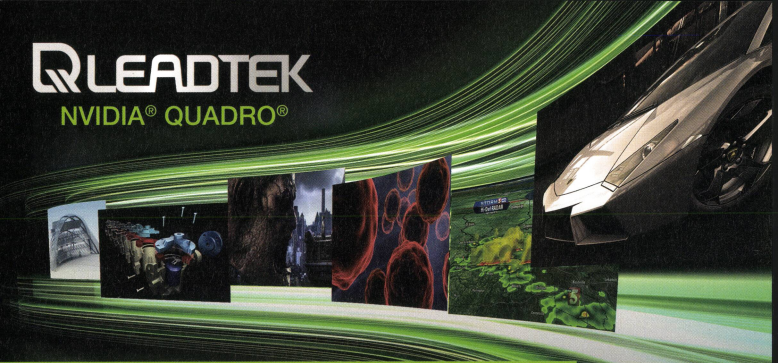


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ASUS X58 Chipset
3GB Corsair DDR3 (1333MHz)
1TB HDD, 850W PSU
PowerColor HD 5770, 1GB
CoolerMaster CM690, Blu-Ray

$1729

+ $20 1.5TB HDD
+ $120 4GB Memory
+ $225 HD5850 1GB

STINGER



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Corsair 2x 64GB SSD + 1TB HDD
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Blu-Ray Burner, Obsidian Case
Corsair 1000W PSU, H50 Cooler

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+ $130 12GB Memory
+ $135 2 x 1TB HDDs
+ $270 Core i7 950

REDBACK GOLD



Intel Core i7 860 (2.80GHz)
GIGABYTE P55 Chipset
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XFX Radeon HD 5750, 1GB
Antec Two Hundred, 750W

$1399

+ $10 HD 5770 1GB
+ $20 1.5TB HDD
+ $125 Blu-Ray Reader

REDBACK SILVER



Intel Core i5 750 (2.66GHz)
GIGABYTE P55 Chipset
Corsair 2GB DDR3 (1333MHz)
500GB SATAII HDD, 16MB
PowerColor HD 5670, 512MB
Antec Two Hundred, 550W

$949

+ $60 1TB HDD
+ $90 HD5770 1GB
+ $95 4GB Memory

MANTIS HTPC



Intel Core i3 540
733MHz Graphics
GIGABYTE
H55 Chipset
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460W Zalman PSU
MCE Remote Included

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HORNET GOLD



Intel Core i5 661 (3.33GHz)
GIGABYTE H55 Chipset
Corsair 4GB DDR3 (1333MHz)
500GB SATAII HDD, 16MB
Intel 900MHz Graphics, HDMI
Centurion 5 Case, 460W PSU

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+ $109 Radeon HD 4770
+ $110 Intel Core i5 670

HORNET SILVER



Intel Core i3 530 (2.93GHz)
GIGABYTE H55 Chipset
Corsair 2GB DDR3 (1333MHz)
500GB SATAII HDD, 16MB
Intel 733MHz Graphics, HDMI
Centurion 5 Case, 460W PSU

$699

+ $20 Core i3 540
+ $60 1TB HDD
+ $95 4GB Memory

BEETLE



Pentium Dual E5300 (2.60GHz)
GIGABYTE G41 Chipset
Corsair 2GB DDR2 (800MHz)
500GB HDD, 420W PSU
Intel X4500 Graphics
Aywun A1-502 Black Case

$415

+ $20 640GB HDD
+ $70 4GB Memory
+ $80 Core 2 Duo E7500



Pentium Processor Rating
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NEW Core i7 Processor Rating
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State of the Art Home Cinema.



Only 1 Left!

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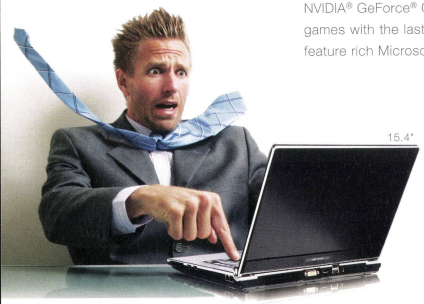
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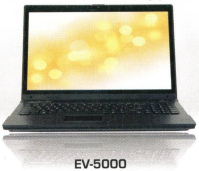
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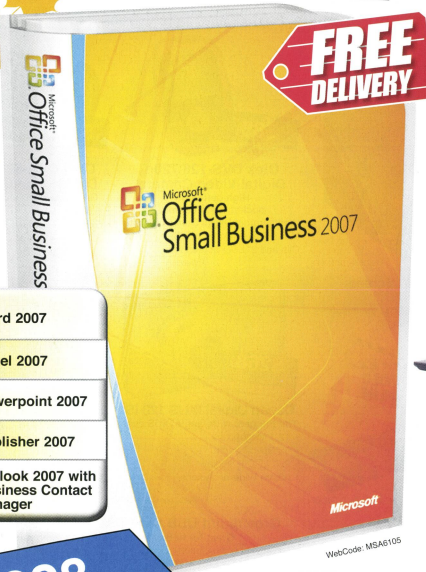
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Greenpoint Solar Powered Phone Charger

Charge your phone, camera, & iPod with solar power!

- Charge your phone in 60-90 mins!
- 10 Connectors included

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Acer Aspire 5635 Notebook

Built for SOHO

- 2.2 GHz Intel Core 2 Duo
- 3GB DDR3 RAM
- 320GB Hard Drive
- Windows 7 Home Premium

$698
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Windows 7

WebCode: ACN1649



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Efficient and sharp detail

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- 9600x600 DPI
- USB 2.0, Ethernet

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SVP Digital Slide Scanner

Convert all your 35mm negatives and slides to digital images

- Converts all 35mm color / monochrome negatives and mounted slides to digital at the touch of a button
- 5MP CMOS sensor provides 10 bits per colour channel for data conversion, and uses fixed focus and automatic exposure control and colour balance, resulting in clear digital images without the loss of resolution
- Ideal for safeguarding images from weddings, holidays and treasured family moments
- Each negative or slide takes less than a second to scan and download into a digital file to print, copy to CD or store
- 3 Mega Pixel
- USB 2.0 connection



$49.80 HOT PRICE

WebCode: BUN0082



VIDEO ONLINE

Digital Photo Frames

Showcase your favourite memories

7"	Greenpoint Frame - Black (480 X 234)	GPE0003	$39.95
12.1"	Greenpoint Frame - Black (800 X 600)	GPE0004	$124
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Otek DVS-126 720p Digital Video Camera

High definition pocket video camera

Weatherproof Digital Camcorder with Music Player, Compass, Carabineer Clip and 2" LCD Screen

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$199 NEW

Otek DVH-590 1080p Digital Video Camera

Great value HD video camera

- 5.0 Megapixel
- 5x Optical Zoom
- 3.0" Touch Screen
- Li-Ion Battery

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Otek Digital Slide Scanner with 2.4" Screen

Stand alone slide scanner

Easily capture and archive your slide and negatives. Never lose the image quality of your slides once they are converted to a digital image.

- 5 Megapixel
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- Easy to use with software included



VIDEO ONLINE

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WebCode: OTE0004



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Canon Digital IXUS 120 IS

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- 12.1 Megapixels
- 4x Optical zoom
- 2.7" LCD II display
- 28mm Wide-angle lens

WebCode: CAN4047



$640 Save $153 FREE DELIVERY

Canon Powershot G11 Digital Still Camera

Amazing in low light!

- 10 Megapixel
- 5x Optical zoom
- 28mm Wide angle lens
- 2.8" Screen

WebCode: CAN4026



$699 Save $250

Epson V700 Scanner

Advanced film, document & photo scanning solution

- 6400 dpi x 9600 dpi
- FireWire & USB connectivity
- Windows & MAC compatible
- 48-bit colour

WebCode: EPS0700



$297 Save $52

Canon CanoScan 8800F Scanner

High speed document / Photo slide scanner

- 4800x9600 dpi
- Continuous scanning of up to 12 slides
- USB connectivity
- Scan to PDF

WebCode: CAN5015

Greenpoint USB Digital Microscope (25x-400x)

Great for hobbyists and curious young minds

Capture higher resolution images and video then display them on your PC using a simple USB connection. Collect items from around the house take a closer look and satisfy your curiosity! The microscope provides its own illumination via LEDs so you just plug it into your computer, download the software and view objects on your PC up to 400x.



VIDEO ONLINE

$99

WebCode: GPE0008

Greenpoint 4GB Credit Card MP3 Player

Carry your favourite MP3's in your wallet!

- Size of a Credit Card!
- Holds up to 2000 MP3's
- 2.5mm Jack headphones
- USB Plug'n'Play
- Up to 8 hour battery life on each charge



WebCode: GPE0001



Digitek 8 Way Surge Board

Protect your valuable equipment

Protect against:

- Lightning Strikes
- Surges
- Spikes
- EMI / RFI

WebCode: BIT0001



Laser HD PVR Set Top Box

Receives all the latest Free view Digital channels

- PVR via USB or HDD (500GB or under)
- 7 Day Electronic Program Guide

WebCode: LAS9997



Akai USB Turntable for PC & Mac

Convert your vinyl records to digital with ease!

- USB & Analogue Connectivity for PC and MAC
- 295mm Turntable Platter

WebCode: AKA0001



DJ Tech Cassette Tape to MP3 Encoder

Turn your cassette tapes into MP3s

- Store your cassette tapes on your PC
- Voice activated system cassette deck with TWO Speed Play.

WebCode: DJT0001



Triple Car Adapter with USB Port

Plug in up to 4 devices at the same time when you on the go!

- Works in cars or trucks 12v / 24v
- Plug in up to 4 devices at the same time

WebCode: RDM0001



Greenpoint 175w Inverter with USB Outlet

Mains power from your cigarette lighter socket

Charge and power your electronics on the road, in your car!, 90.5% surge capacity to start high loads

WebCode: GPE0005



Logitech S125I iPod Speakers

Ready to move, ready to groove

Whatever iPod you have iPod classic, iPod nano, or iPod touch you can play and charge it with this speaker dock

WebCode: LOG3832



DJ-Tech DJ Mouse MP3 Mixing Kit

Real-time mixing and scratching on MP3's

We are proud to bring you the first DJ Mouse, fully designed and made for all DJ applications

WebCode: DJT0002

AVLabs USB HD Digital TV Tuner

Watch TV on your computer!

You can enjoy watching or recording digital TV on your computer or laptop anywhere, anytime!



WebCode: AVL1013

HD HomeRun Network TV Tuner

One TV tuner for all your PC's

Watch & record digital TV or record two channels at same time across multiple computers.



WebCode: LAK0014



OXX - DAB+ Classic Internet Digital Radio

10,000 Radio stations, at your fingertips!

- Supports DAB & DAB+ Digital
- iPod & MP3 Player Inputs

WebCode: Black - LAK0015
WebCode: White - LAK0016



CD/DVD Disc Scratch Repair Kit

Say goodbye to scratched discs!

Easy to use repair kit includes all the accessories you need to fix your scratched CD's and DVDs

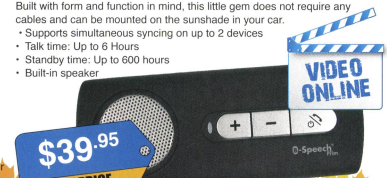
WebCode: HAL2001

B-Speech Bluetooth Handsfree Carkit

Save yourself a traffic infringement with this product

Built with form and function in mind, this little gem does not require any cables and can be mounted on the sunshade in your car.

- Supports simultaneous syncing on up to 2 devices
- Talk time: Up to 6 Hours
- Standby time: Up to 600 hours
- Built-in speaker



WebCode: BSP0002



Linksys WRT120N Wireless-N Router

Twice the speed of Wireless-G

The Wireless-N Home Router gives you a wireless connection that's twice the speed of Wireless-G

WebCode: LNK1200



Linksys WRT54GL Linux based Wireless-G Router

Designed specifically for hobbyists and wireless aficionados

- Eliminate the need for cables
- Compatible with Wireless-B
- Browser-based configuration utility

WebCode: LNK5525



Billion BiPAC 7404VNPX ADSL2+ Firewall Router

The router that has it all VOIP, 3G, ADSL2+, Wireless-N

Dual WAN interfaces for ADSL2+ and 3G connections. High speed internet access with ADSL2 / 2+; backward compatible with ADSL

WebCode: BIL0040



Billion BiPAC 7800N ADSL2+ Firewall Router + Gigabit Ethernet Switch

Recommended for the enthusiasts

- Draft-N wireless
- 4-Port gigabit switch
- Robust Firewall Built-In

WebCode: BIL0041



NetComm NP3680 Multifunction USB Server

Connect USB storage or a printer to your network

- 2 USB Ports
- MAC & Windows supported
- Ethernet 10/100

WebCode: NET9483



NETGEAR MBR624GU 3G Wireless Router

Share your 3G connection

- Wireless G with 4-Port switch
- Push 'N' Connect WiFi Setup.
- Green energy saving

WebCode: NTG8221



Linksys WRT610N Dual-N Wireless Router

Faster gaming, music, and HD video streaming

Internet-sharing router and 4-port Gigabit Switch with built-in dual-bands that will increase speed and range.

WebCode: LNK6300



NETGEAR WNDR3700 Dual Band N Gigabit Router

The power you want and flexibility you need for your network

- Gigabit Ethernet ports deliver ultra-fast wired connections
- 3 power and range settings reduce power up to 75%

WebCode: NTG8346



D-Link Powerline HD 4-Port Starter Kit

Create a network using your home's existing electrical wiring

Everything you need to connect computers, digital media players, game consoles and other Ethernet-enabled devices in a network via your home's existing electrical wiring.

- Ideal for HD video, music sharing, on-line games, VoIP Calls
- Network security with the push of a button
- Simple plug and play

WebCode: DLK0307



Linksys WUSB600N Dual Band Wireless N USB Adapter

Ultrafast connection through USB

- Connect to 2.4GHz or 5.0GHz
- Compatible with wireless A,B,G,N

WebCode: LNK6290



NETGEAR GA311 Gigabit PCI Adapter

Outstanding speed

- 10/100/1000 Autosensing ports
- PCI Plug and play

WebCode: NTG7154



DGS-1008D 8-Port Gigabit Desktop Switch

Get the blazing speed of Gigabit Ethernet connection

- Green Ethernet technology
- 16Gbps switching capacity
- Desktop or wall-mount design
- Non-blocking architecture

WebCode: DLK0667



D-Link DGS-1224T WebSmart 24-port Gigabit Switch

Create a high-speed Ethernet network with Gigabit capability

- Two combo SFP fiber connections
- Network security
- Traffic segmentation

WebCode: DLK9225



QNAP TS-219P 2-Bay NAS Server

Supports 2.5" & 3.5" SATA HDD's

- iSCSI Support
- RAID 0, 1, JBOD systems
- Gigabit Ethernet

WebCode: QNA0028



QNAP TS-410 4-Bay NAS Server

Low power consumption & quiet operation

- RAID 0,1,5,6 JBOD
- Surveillance station built-in
- Gigabit Ethernet

WebCode: QNA0035

What is USB 3.0 ?

USB 3.0 is the next major revision of the Universal Serial Bus, created in 1996 by a consortium of companies led by Intel. Superseding USB 2.0.

What are the benefits ?

More Power Efficient – Power saving devices on idle.
Better Transfer rates - Up to 4.8Gbps
Built specifically for future technologies.

Backward compatible with USB 2.0 devices



Unitech USB 3.0 PCMCIA Express Card

Add USB 3.0 compatibility to your notebook

- NEC UPD720200 chipset
- ExpressCard/34 form factor module
- Compliant with USB 3.0 Super-Speed (5Gbps),
- Windows XP/Vista/7 (32-bit/64-bit)
- 2 x external USB 3.0 connectors



WebCode: UNI1001

Unitech USB 3.0 PCI Express Controller

Add USB 3.0 compatibility to your desktop

- PCIe 1x bus interface
- Compliant with USB 3.0 Super-Speed (5Gbps),
- Windows XP/Vista/7 (32-bit /64-bit)
- 2 x external USB 3.0 connectors



WebCode: UNI1000

Unitech USB 3.0 HDD SATA Dock

Transfer data at USB 3.0 Speeds

- USB 3.0 SuperSpeed (5 Gbps)
- Compliant to USB 3.0 Specification
- Supports ATA / ATAPI device (option)
- Supports 2TB over HDD
- Supports Win 98/ME/2000/XP Vista /Windows 7



WebCode: UNI1002

LaCie 1TB Network Space 2

Extend the storage on your network

With the LaCie Network Space 2, you're not simply storing files from your computer; you're storing files from all over your home. Connect the Network Space 2 through the Ethernet port to a computer or to a router, and share and store all of your media files from anywhere in your house, with the read and write speeds that you need. You can even back up multiple computers to ensure that your files are safe.

WebCode: LAC1326

LaCie Rikiki Hi-Speed USB 2.0 500GB

Resistant aluminum exterior

- USB Boost and backup software included
- Plug & play



WebCode: LAC1905



SanDisk Cruzer Micro USB Flash Drives

Premium storage in a capless design

4GB	SAN0292	$22
8GB	SAN0192	$30
16GB	SAN0193	$53
32GB	SAN0198	$106



Verbatim Pin Stripe 4GB USB

Store 'n' Go in style!

Green	VBM2503	$16
Pink	VBM2506	$16
Blue	VBM2507	$16



Verbatim Micro 4GB USB

Storage that fits on your keychain!

Green	VBM0193	$16
Pink	VBM0194	$16
Blue	VBM0195	$16



Verbatim 2.5" Mobile Disk

Storage in a slim form factor

320GB	VBM6287	$86
500GB	VBM6288	$126

SanDisk



Ultra II SD

4GB	SAN0098	$18
8GB	SAN0101	$34
16GB	SAN0151	$63
32GB	SAN0197	$132



Extreme III SDHC

4GB	SAN0125	$27
8GB	SAN0126	$45
16GB	SAN0275	$146
32GB	SAN0209	$241



MS Pro Duo

4GB	SAN0053	$23
8GB	SAN0120	$39
16GB	SAN0189	$82
32GB	SAN0208	$168



Ultra II MS Pro Duo

4GB	SAN0066	$31
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16GB	SAN0196	$115
32GB	SAN0333	$232



Ultra II CF

2GB	SIM0691	$19
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8GB	SAN0037	$45
16GB	SAN0216	$79



Extreme Pro CF

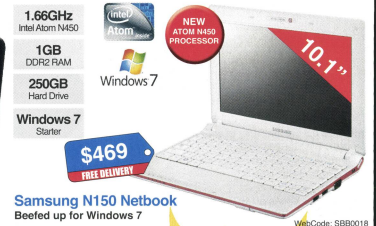
16GB	SAN0213	$245
32GB	SAN0214	$435
64GB	SAN0215	$795



ASUS Eee PC 1001HA Netbook

Go anywhere in style with Eee PC 1001HA Seashell

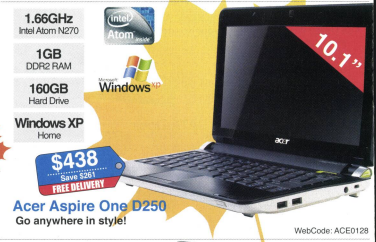
WebCode: ASE10038



Samsung N150 Netbook

Beefed up for Windows 7

WebCode: SBB0018



Acer Aspire One D250

Go anywhere in style!

WebCode: ACE0128



Acer Aspire 5635 Notebook

Built for SOHO

WebCode: ACN1649



Lenovo G550 Notebook

New & Updated Specifications

WebCode: LEN0290



Samsung R580 Notebook

nVidia GT310M 512MB DDR3 Graphics fitted

WebCode: SBN0020



Acer Aspire 5738 Notebook

Touch screen technology

WebCode: ACE0132



Samsung R780 Notebook

nVidia GT330M 1GB DDR3 graphics fitted

WebCode: SBN0017



Lenovo X200 Notebook

Massive 9 cell battery fitted

WebCode: IBT7549



Acer X193HQ 19" Widescreen LCD

- 5ms Response Time
- 1366x768 Resolution
- 10,000:1 Constrast Ratio
- 300 cd/m2 Brightness

WebCode: ACM0148



Samsung 2233RZ 22" 3D LCD Monitor

- 3ms (3D) Response Time
- 1680x1050 Resolution
- 20000:1 Contrast Ratio
- 300 cd/m2 Brightness

WebCode: SAM2322

Acer X233HB 23" 16:9 Full HD Monitor

Outstanding value and quality

- 5ms response time
- 1920x1080 Resolution
- 300 cd/m2 brightness
- 4,000:1 Contrast Ratio



WebCode: ACM0145



PicoTech USB Pocket Projector

Fits in your pocket!

The USB Pico projector is a perfect companion to any netbook, notebook or PC for small group presentations and entertainment

WebCode: PIC1001



40" Portable Projector Screen

Can be easily carried on an aeroplane

Perfect for on the go or impromptu presentation

50" Screen (MNT0003) $139

WebCode: MNT0002



Havit Universal AC/DC 100W Notebook Adapter

Can be used in car and at home

- Great replacement power adaptor for most notebooks.
- Fits notebook power output ranging 15V - 24V

WebCode: HAV0001



Eaton Powerware 3105 700Va UPS

Never lose power to your devices again

Protects small office and home office equipment from power outages, surges, sags, and line noise

WebCode: PWR1003



Wireless Entertainment Keyboard with SmartPad

WebCode: ORT0002



Microsoft Wireless Laser Desktop 6000 V3 Keyboard Mouse

WebCode: MST8490



Microsoft Natural Wireless Laser Mouse 6000

WebCode: MST8438



Logitech Bluetooth Mouse M555b

WebCode: LOG3823



Microsoft Comfort Optical Mouse 1000

WebCode: MST8422



USB Wired SmartPad

WebCode: ORT0001



USB Powered LED Light

WebCode: RDM0012



Olin Digital Voice Recorder – 512MB

WebCode: OLI0013



USB VGA Webcam

WebCode: RDM0011



Logitech QuickCam Pro 9000

WebCode: LOG3650



Wireless Presenter

WebCode: SIG0009



Logitech Wireless Presenter R400

WebCode: LOG3550



Samsung CLX-3175FN Colour Laser Multifunction

Fax / copier / printer / scanner

- 17ppm Mono & 4ppm Colour
- 2400x600 DPI Printing
- USB 2.0, Ethernet

WebCode: SAM3175

1.5K Black	SAM6564	$76
1K Cyan	SAM6565	$64
1K Magenta	SAM6566	$64
1K Yellow	SAM6567	$64



Samsung CLP-620ND Colour Laser

Efficient and sharp detail

- 20ppm Colour & Mono
- 9600x600 DPI Printing
- USB 2.0, Ethernet

WebCode: SAM0620

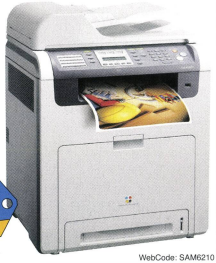
5.5K Black	SAM0621	$129
5.5K Cyan	SAM0622	$152
5.5K Magenta	SAM0623	$152
5.5K Yellow	SAM0624	$152

Samsung CLX-6210FX Colour Multifunction

Fax / copier / printer / scanner

Reach out and explore the possibilities! The CLX-6210FX series is designed to fit the way your business works. There are a variety of advanced features, and simplified connectivity to match your needs.

- 20ppm Mono & Colour
- 65,000 Monthly duty cycle
- USB 2.0, Ethernet



WebCode: SAM6210

5K Black	SAM6361	$149
5K Cyan	SAM6362	$196
5K Magenta	SAM6363	$196
5K Yellow	SAM6364	$196



Fuji Xerox Phaser 3100 MFPX Mono Multifunction

Fax / copier / printer / scanner

- 20ppm Mono
- 600x600 DPI
- USB 2.0
- Print, Scan, Copy, Fax

WebCode: FXP3109

4K Black	FXP3103	$148



Fuji Xerox DocuPrint C1190 Colour Multifunction

Print / Copy / Scan / Fax

- Resolution 600 x 600 DPI
- 12ppm Colour / 16ppm Mono
- PC & MAC Compatible
- USB 2.0, Ethernet

WebCode: FXP1190

3K Black	FXP1193	$106
3K Cyan	FXP1194	$175
3K Magenta	FXP1195	$175
3K Yellow	FXP1196	$175



Fuji Xerox DocuPrint C2200 Colour Laser

Handle complex documents with ease

- 25ppm Mono & Colour
- 256MB RAM
- USB 2.0, Ethernet

WebCode: FXP2201

4K Black	FXP2208	$176
4K Cyan	FXP2209	$217
4K Magenta	FXP2210	$217
4K Yellow	FXP2211	$217



Fuji Xerox Phaser 8560DN Colour Laser

Efficient solid ink technology

- 30ppm Colour & Mono
- Built-in Duplexer
- USB 2.0, Ethernet

WebCode: FXP0562

3.4K Black	FXP0569	$84
3.4K Cyan	FXP0570	$126
3.4K Magenta	FXP0571	$126
3.4K Yellow	FXP0572	$126



Epson Stylus TX800FW Colour Inkjet MFP

Fax / copier / printer / scanner

- 40 ppm Mono & Colour
- Up to 5760 x 1440 DPI printing
- USB 2.0, Ethernet, Wireless G

WebCode: EPI0803

Black	EPA2192	$20
Light Cyan	EPA2592	$20
Light Magenta	EPA2692	$20
Cyan	EPA2292	$20
Magenta	EPA2392	$20
Yellow	EPA2492	$20



Canon PIXMA iP4700 Inkjet Printer

Vibrant photos & documents at home

- 9600x2400 DPI
- 1 Picolitre droplet
- CD & DVD Printing
- USB 2.0

WebCode: CNN0057

Black	CAN7000	$18
Cyan	CAN7003	$18
Magenta	CAN7002	$18
Yellow	CAN7001	$18



Canon PIXMA MP560 All-in-One Inkjet Printer

Wireless-Ready multifunction inkjet

- 9600x2400 dpi printing
- 5 Colour ink tanks
- 2.0" TFT screen

WebCode: CNN0058

Black	CAN7000	$18
Grey	CAN7004	$18
Photo Black	CNN0022	$27
Cyan	CAN7003	$18
Magenta	CAN7002	$18
Yellow	CAN7001	$18



Canon PIXMA iP100 Portable Inkjet Printer

Portable printing solution

- 20ppm Mono, 14ppm Colour
- 9600 x 2400 DPI
- USB, Infrared

WebCode: CAN0732

Black PGI-35	CAN8104	$15
Colour CLI-36	CAN8105	$32

Adobe Photoshop Elements 8 & Adobe Premiere Elements 8

Photo and video editing made easy!

Adobe Elements software makes it easy to create incredible movies & photos. Get started quickly with automated moviemaking options, add knockout visuals and sound, and share your creations everywhere.



$184 Save $85 HOT PRICE

WebCode: ADS5003

Corel Paint Shop Pro Photo X2 Ultimate

A complete photo-editing software solution

- Reduce red-eye, brighten images, and edit photos with ease.
- Easy and intuitive user-interface



$129 Save $70 HOT PRICE

WebCode: CORI9203

Corel Video Studio X2 Pro Ultimate

All-in-one video-editing software

Create high-quality HD and standard-definition movies, slide shows and DVDs.



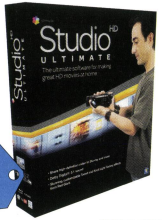
$196 Save $53

WebCode: CRL0012

Pinnacle Studio 14 HD Ultimate

The ultimate software for making HD movies at home

- Stop-motion capture & fluid image stabilization technology from Avid
- Share straight to Blu-ray, HD DVD, DVD, YouTube, the web, MP3 sound files and more
- Export movies for Flash, QuickTime, AVCHD, PS3, Nintendo Wii, Xbox and more



$124 Save $121

WebCode: PIN0989

Punch! Weekend Project

Your ideas made easy

- Simple step-by-step instructions to complete any project.
- Over 100 mins of video tutorials
- Print out a bill of materials



$44 Save $5

WebCode: PUN0034

Punch! Home & Landscape Design Pro

Dream it. Visualise it. Do it!

- Over 100 hours of video tutorials
- Integrated web access for all your needs



$193 Save $56

WebCode: PUN0033

WebCreator 5 Pro

The easy solution for creating professional websites

- No programming required!
- Select from 150 customisable templates!
- Add visual effects, media content, photos, forums & blogs.



$89 Save $10

WebCode: WBC0001

Extensis Suitcase Fusion 2

Professional font manager

Locate, group, examine, preview and activate any font in your libary. A must for graphic designers!



$156

WebCode - MAC: EXT0098
WebCode - WIN: EXT0097

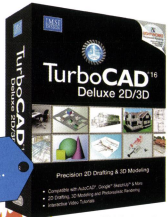


TurboCAD 16 Deluxe 2D/3D

Unlimited design options

Hundreds of professional drafting and design tools, incredible file support, video and interactive tutorials. Recreate products, architecture, and floor plans with ease.

- 2D Drafting/Drawing
- 3D Modelling
- CAD Projects



$159 Save $40

WebCode: IMS0153

Lapazz Graphic Tablets

Freestyle draw like never before!

Lapazz Tablets will give you more flexibility in exploring your creativity and mastering your design skills. With Wired & Wireless versions available, 1024 levels of pressure, and compatible with Windows 7. Lapazz allows you to be the master of all creations!

5 x 4" - Wired	LPZ0001	$49.95
5 x 3" - Wireless	LPZ0003	$88
12 x 9" - Wired	LPZ0002	$149.95



$1790
Save $162
FREE DELIVERY

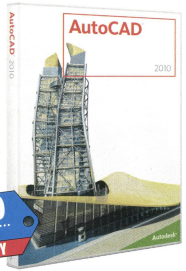
AutoCAD LT 2010

The most comprehensive 2D CAD solution

AutoCAD LT 2D drafting and detailing software is the professional choice because we focus on boosting your productivity. A comprehensive set of 2D tools allows you to accurately and efficiently create, modify, and document your drawings. Using the genuine DWG file format provides stability and compatibility when you communicate with clients and colleagues. And you can optimise the software for the way you work with menu and user interface options. Packed with powerful features, AutoCAD LT is built for drafting.

Upgrade (AUT0224) **$899**
Subscription (AUT0225) **$375**

WebCode: AUT0223



$5990
Save $527
FREE DELIVERY

AutoCAD 2010

Take design further

Speed up documentation, share designs accurately, and explore ideas more intuitively in 3D. Getting that new design from paper to computer has never been easier. Proving to be the industry standard for model prototypes, to floor plans, and even more. AutoCAD provides the ultimate in power and flexibility, customisable for your specific needs.

- Keep everything connected with the new parametric drawing tool, saving you time and energy for bigger challenges.
- Minimize workarounds with automated annotation scaling features.
- Use the intuitive ribbon-based user interface to access commands based on the task at hand.
- Manage and edit your blocks easily by using Dynamic Blocks.

WebCode: AUT0231



$1155
Save $62
FREE DELIVERY

Autodesk Mudbox 2010

Sculpt and paint ultra-realistic 3D characters and environments

- Intuitive, brush-based sculpting
- 3D high-resolution painting
- Texture baking for film and game pipelines

WebCode: AUT0260



$2150
Save $132
FREE DELIVERY

Autodesk Inventor

Digital prototyping at its best!

Create a single digital model that gives you the ability to design, visualize, and simulate your products

WebCode: AUT0259



$519
Save $310
FREE DELIVERY

CorelDRAW Graphics Suite X4

The design software of choice for the signage industry

Create powerful designs using intuitive vector illustration and page layout tools.

WebCode: COR8968



$569
Save $230
FREE DELIVERY

Corel Painter 11

The most inventive digital painting software on the market

Gain a full art studio that gives you the tools to create unprecedented artwork.

WebCode: COR8712

Wacom Cintiq 21UX 21" Graphics Tablet

High-resolution display and a dynamically adjustable stand



$2699
Save $799
HOT PRICE

WebCode: WAC0101

wacom

ACCESSORIES AVAILABLE ONLINE!



FREE DELIVERY

Wacom Intuos4 Graphic Tablets

Precise control for graphic professionals

Intuos4 – Small	4 x 6"	WAC4400	$295
Intuos4 – Medium	6 x 9"	WAC6400	$450
Intuos4 – Large	8 x 13"	WAC8400	$610
Intuos4 – XLarge	12 x 19"	WAC1240	$940

Adobe

	Design Premium	Design Standard	Web Premium	Web Standard	Production Premium	Master Collection
Components						
InDesign	●	●				●
Photoshop Ext	●		●		●	●
Photoshop		●				
Illustrator	●	●	●		●	●
Acrobat 9 Pro	●	●	●			●
Flash Pro	●		●	●	●	●
Dreamweaver	●		●	●		●
Fireworks	●		●	●		●
Contribute			●	●		●
After Effects					●	●
Premiere Pro					●	●
Soundbooth			●		●	●
OnLocation					●	●
Encore					●	●
Shared features, services and applications						
Bridge	●	●	●	●	●	●
Device Central	●	●	●	●	●	●
Dynamic Link					●	●
Version Cue	●	●	●	●		●
Pricing						
Student	**$315**	**$259**	**$267**	**$229**	**$314**	**$473**
WebCode - WIN	ADS0025	ADS0028	ADS0033	ADS0035	ADS0031	ADS0024
WebCode - MAC	ADS0026	ADS0029	ADS0032	ADS0034	ADS0030	ADS0029
Academic	**$828**	**$623**	**$731**	**$536**	**$823**	**$1378**
WebCode - WIN	AEP0072	AEP0074	AEP0085	AEP0087	AEP0078	AEP0076
WebCode - MAC	AEP0071	AEP0073	AEP0079	AEP0086	AEP0077	AEP0075
Upgrade	**$859**	**$687**	**$828**	**$566**	**$822**	**$1247**
WebCode - WIN	ALG1109	ALG1115	ALG1133	ALG1139	ALG1127	ALG1121
WebCode - MAC	ALG1108	ALG1114	ALG1132	ALG1138	ALG1126	ALG1120
Full	**$2588**	**$1982**	**$2341**	**$1389**	**$2411**	**$3587**
WebCode - WIN	ALD1207	ALD1209	ALD1215	ALD1217	ALD1213	ALD1211
WebCode - MAC	ALD1206	ALD1208	ALD1214	ALD1216	ALD1212	ALD1210



Adobe Photoshop CS4

Create powerful images with the professional standard

Explore your creativity, and create visual stunning designs with ease. The industry standard in photo editing & design.

WebCode - WIN: ALD1235
WebCode - MAC: ALD1234



Adobe Photoshop Extended CS4

Explore your wildest ideas while you develop valuable career skills

Breakthrough 3D painting and compositing capabilities let you work with 3D models images.

WebCode - WIN: ALD1239
WebCode - MAC: ALD1238



Adobe Premiere Pro CS4

Capture, edit, and deliver video online

The start-to-finish video production solution that includes Adobe OnLocation CS4 and Encore CS4 software.

WebCode - WIN: ALD1203
WebCode - MAC: ALD1202



Adobe Photoshop Lightroom 2

Simplify photography from shoot to finish

Enhance specific areas of a photo precisely, adjust overall color, exposure, and tonal range.

WebCode - WIN & MAC: ALD9662



Adobe Illustrator CS4

Comprehensive vector graphics environment

With new transparency in gradients and multiple artboards that invite you to explore more efficient ways to design.

WebCode - WIN: ALD1230
WebCode - MAC: ALD1229



Adobe InDesign CS4

Professional layouts for print and digital publishing

Create compelling print layouts, immersive content for playback in the Adobe Flash Player runtime, and interactive PDF documents.

WebCode - WIN: ALD1232
WebCode - MAC: ALD1231



Adobe Fireworks CS4

Can rapidly prototype and design for the web

Create and optimise images for the web more quickly and accurately than ever before with an enhanced toolset.

WebCode - WIN: ALD1223
WebCode - MAC: ALD1222



Adobe Dreamweaver CS4

Design, develop, and maintain standards-based websites and applications

Make your vision a reality with one of the industry's leading web authoring tools.

WebCode - WIN: ALD1221
WebCode - MAC: ALD1220

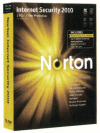
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If you have more than 5 computers

Why do I need Software Licenses?
Save Money, Easy to Manage, Easy to upgrade.

Call City Software on 1300 658 600 to speak to a Software Licensing Consultant or email licensing@citysoftware.com.au





Norton Internet Security 2010

Safer. Smarter. Faster.

1 Year Subscription

3 User	SYM8851	$79
5 Users	SYM8851	$135
10 Users	SYM8852	$189



Norton 360 4.0 – 3 User

All-in-one security just got better

1 Year Subscription

3 User	SYM3600	$94
5 Users	SYM3601	$160
10 Users	SYM3602	$267



VMware Fusion 3

The best way to run Windows on your MAC

Run the most demanding MAC and Windows applications side-by-side at maximum speeds without rebooting

WebCode: VMW0041



Net Nanny Home 6

Protect your family on the internet from inappropriate content!

3 great Internet Protection tools - 1 great value! Net Nanny Home Suite gives you a fully integrated suite of Internet Protection.

WebCode: MAN0170

AVG Internet Security 9.0

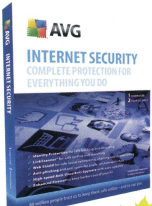
Complete protection for everything you do

Anti-Virus, Anti-Spyware, Anti-Rootkit, Anti-Spam, Anti-Phishing, Enhanced Firewall, Web Shield, LinkScanner & Identity Protection.

- Safe banking and shopping
- Keeps your private information secure
- Ensures web pages you visit are safe

1 Year Subscription

1 User	AVG0006	$48
3 Users	AVG0009	$69
5 Users	AVG0007	$99
10 Users	AVG0008	$179





Roxio Creator 2010

The #1 selling digital media suite

- Support for ATI Stream and NVIDIA CUDA technology.
- Burn and copy discs directly on your desktop.

WebCode: ROX5020



Roxio Toast 10 Titanium Pro for MAC

The leading MAC burning suite

The best way to get pro-quality results in burning, video and photo projects. Enjoy all the power of Toast 10.

WebCode: ROX5012

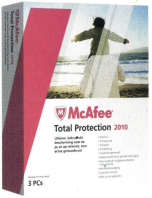
McAfee Total Protection 2010

Protection you can trust

Revolutionary McAfee Active Protection technology provides the fastest protection against malicious threats to your PC. New and emerging threats are analyzed and blocked in milliseconds, so you don't have to wait for regular updates to arrive. Set-it-and-forget-it security works in the background and lets you focus on things you want to do.

1 Year Subscription

3 Users	MCA0066	$99
6 Users	MCA0068	$152





Nero BackItUp & Burn

Simply back up, burn, and recover data for safe keeping!

Nero BackItUp & Burn gives you full control over the protection of your personal data.

WebCode: BUL0004



Nero 9 Reloaded

Simply create, rip, burn, copy, share, backup, play, and enjoy

The next generation of the world's most trusted integrated digital media and home entertainment software suite.

WebCode: NER0043

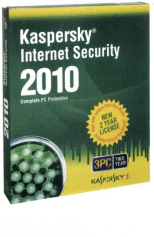
Kaspersky Internet Security 2010

Award winning security.

Kaspersky Internet Security 2010 offers a number of new and improved features together with unique protection technologies to address the latest online threats. Keep your PC running smoothly and customize protection according to your activities. With a range of unique tools for heightened security. Protect your family while keeping your PC healthy!

2 Year Subscription

1 User	KAS0023	$49
3 Users	KAS0014	$83





Symantec Norton Ghost 15

Create full system and simple backups

- Cold Imaging lets you back up files without installing Ghost
- Back up large amounts of data to high-capacity Blu-ray Disc-up to 25GB per disc or 50GB dual-layer

WebCode: SYM8883



Acronis True Image Home 2010

Easy and fast disk imaging

Provides home users reliable and timeless backup and recovery of their operating system, applications, settings and personal files.

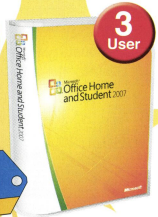
WebCode: MAN0171

Microsoft Office Home & Student 2007

Great for families, excellent for students

The software suite that helps people easily create great-looking documents, worksheets and presentations, as well as manage notes and information at home.

- Microsoft Excel
- Microsoft Powerpoint
- Microsoft Word
- Microsoft OneNote



$108 Save $101 HOT PRICE

WebCode: MSA6101



Windows 7

Everything you need for business and home

Home Premium	MSA5131	$265	SAVE $34
Home Premium - Upgrade	MSA5132	$169	SAVE $30
Professional	MSA5134	$379	SAVE $70
Professional - Upgrade	MSA5135	$339	SAVE $60
Ultimate	MSA5128	$389	SAVE $30
Ultimate - Upgrade	MSA5129	$339	SAVE $90



Microsoft Office Suites

Create visually stunning documents, worksheets & presentations

Home & Student 2008 - MAC	MSA3770	$179	SAVE $49
Office Business Edition 2008 - MAC	MSA3780	$399	SAVE $200
Small Business Edition 2007	MSA6105	$228	SAVE $441
Professional 2007	MSA6108	$715	SAVE $184

Dragon Naturally Speaking 10 Preferred

Voice recognition, speech-to-text software, perfect for dictation.

Small business and advanced PC users now have the power to create documents, reports and emails three times faster than most people type — with up to 99% accuracy. Surf the Web by voice or dictate and edit in Microsoft Word and Excel, Corel WordPerfect, and most other Windows-based applications.





BONUS Logitech Webcam C250

$259 Save $140 FREE DELIVERY

WebCode: NUA0187



$219 Save $21 FREE DELIVERY

SmartDraw 2010

Create stunning artwork in Microsoft Office with ease

Quickly create the business graphics you need to succeed. SmartDraw is the perfect companion product to Microsoft Office.

WebCode: SMT2010



$145 Save $54 HOT PRICE

Nitro PDF Professional 6

The original and best Acrobat alternative

Fast, high-quality document conversion. Do everything you do with paper electronically.

WebCode: NIT0006



$50 Save $13 HOT PRICE

PaperPort Professional 12

World's favorite document management software

The fastest and easiest way for home users to scan, organize, find and share documents and photos.

WebCode: NUA0146



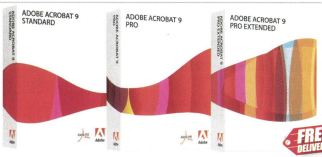
$132 Save $17 HOT PRICE

PDF Converter Professional 6

Complete PDF solution designed specifically for the business user

Create 100% industry-standard PDF files, from virtually any PC application.

WebCode: NUA0156



Adobe Acrobat 9 Series for Windows

Protect your documents with PDF

Adobe Acrobat Standard	ALD9649	$399	SAVE $174
Adobe Acrobat Professional	ALD9652	$594	SAVE $264
Acrobat Pro Extended	ALD9650	$915	SAVE $418



$139 Save $160 HOT PRICE

Nuance OmniPage 17

Never retype or reformat a document ever again!

- Increased word accuracy
- Faster launch times
- One-click toolbar in Microsoft Office
- Asian language recognition

WebCode: NUA0112



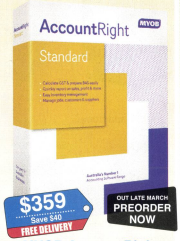
$229 Save $60 FREE DELIVERY

ACT! by Sage 2010

#1 Selling contact manager

Keep all your important relationship details for quick, organised access to the information you need.

WebCode: ACT0050



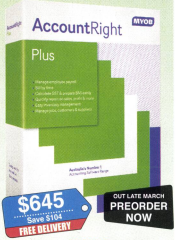
MYOB AccountRight Standard 19

Ideal for small businesses

The smarter way to manage your business and inventory requirements.

- Calculate your GST & BAS
- Google Maps Integration
- Manage jobs, customers & suppliers
- Business performance reports
- Perfect for sole traders
- Estimates (quotes) & job costing.

WebCode: MYB0107



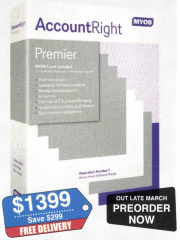
MYOB AccountRight Plus 19

Great for expanding businesses

MYOB AccountRight Plus is business, payroll and time billing software.

- See how your business is performing
- Bill for your time
- Enhanced Help Centre
- Sales invoices & Manage debtors
- Pay & track expenses
- Manage Creditors
- Company Data Auditor

WebCode: MYB0108



MYOB AccountRight Premier 19

Powerful multi-user software

Process foreign currency transactions, streamline payroll and analyse your business in greater detail.

- Integrated payroll management
- Business Insights Dashboard
- Generate comprehensive reports
- Sales invoices & Manage debtors
- Integrate with Microsoft Office
- Complete inventory management
- Transaction management

WebCode: MYB0110



MYOB AccountRight Standard 19 Upgrade

Break into 2010 with extra features, and up-to-date BAS & GST rates

Upgrade from MYOB Accounting

WebCode: MYB0111



MYOB AccountRight 19 Plus Upgrade

Update to the Current GST & BAS Rates, with added features.

Upgrade from MYOB Accounting Plus

WebCode: MYB0112

FREE UPGRADES APPLY FOR 2009 MYOB & QUICKBOOKS VERSIONS

*CONDITIONS APPLY



QuickBooks Accounting 2010/11 + Advantage

Easy to set-up, learn and use

A powerful software package designed for small businesses that require finance and inventory tracking but not payroll management.

WebCode: QUI0199



QuickBooks Plus 2010/11 + Advantage

Comprehensive payroll management

Timesaving features and powerful functionality make QuickBooks Plus a must for efficiency-minded businesses that manage inventory and track payroll.

WebCode: QUI8700



QuickBooks Pro 2010/11 + Advantage

Monitor business performance

Prepares quotes and estimates, integrates seamlessly with Microsoft Office and has advanced tools to analyse key projects.

WebCode: QUI0201



QuickBooks Premier 2010/11 + Advantage

Supports simultaneous users

Incorporate tools and reports to meet your specialised needs, fast multi-user capability and performance increase business efficiency.

WebCode: QUI10202



QuickBooks Easy Start 2010/11

The simplest way to manage sales, expenses and customers

Designed for first-time users needing a simple accounting solution.

WebCode: QUI0198



Quicken Personal Plus 2010/11

Manage your investments

Budgeting tools to help you save and plan for your future. Monitor all of your personal and business investments.

WebCode: QUI0193

Retail Starter Kit 2010/11

Point of sale solution

If you are opening your store for the first time, or upgrading from a cash register, then Reckon's Retail Starter Kit is what you need.

- QuickBooks Plus 2010/11
- Retail Point of Sale Lite 2010/11
- Includes: Receipt Printer, Cash Drawer, & Barcode Scanner



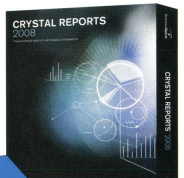
WebCode: QUI0189

Crystal Reports 2008

Design interactive reports & connect them to virtually any data source

Crystal Reports 2008 is a powerful, dynamic, actionable reporting solution that helps you design, explore, visualize, and deliver reports via the web or embedded in enterprise applications.

- Leverage professional reporting
- Empower end users to explore reports with on-report sorting and parameters



$678
Save $103
FREE DELIVERY

WebCode: SCR2008

Delphi 2010 Professional

The fastest way to build native Windows applications

This program is designed for developers building high-performance desktop GUI and touch-screen applications with (or without) embedded and local database persistence. Delphi 2010 Professional's ability to generate fast single exe Windows applications with rich user experiences makes it especially well suited for ISVs building highly-graphical "packaged" Windows applications that seamlessly support an array of Windows versions without modification.

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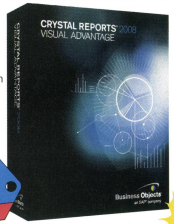
Call 1300 658 600 for a quote

WebCode: EMB1000

Crystal Reports 2008 Visual Advantage

The best of both worlds at a great price!

- Drive performance with industry leading report and visualization solution
- Users can make better decisions with on-report what-if analysis
- Maximize your reporting power from day one with "what-if" analysis
- Minimise IT and developer effort with interactive reports



$1485
Save $86
FREE DELIVERY

WebCode: SLL1615

ER/Studio Data Architect

Data modeling tool for designing and understanding your databases

Embarcadero ER/Studio Data Architect, an industry-leading data modeling tool, helps companies discover, document, and re-use data assets. With round-trip database support, data architects have the power to easily reverse-engineer, analyze, and optimize existing databases. ER/Studio Data Architect provides strong reporting and communication capabilities which can be used to enforce organisational standards and achieve higher levels of productivity.

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ER/Studio® Data Architect
Data modeling tool for designing and understanding your databases

Call 1300 658 600 for a quote

WebCode: EMB1003

FileMaker Pro 11

Tackle any task on Windows, MAC, and the web

FileMaker Pro is the leading easy-to-use database software that helps you manage people, projects, assets, and more - the easy way.

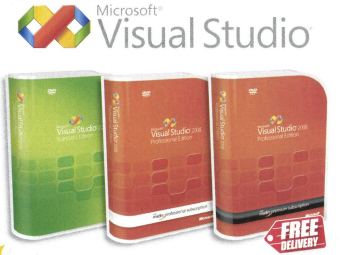
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- New! Quick Reports
- New! Recurring Import

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WebCode WIN - MAC: FIL2514



Bento 3 for MAC

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$79

WebCode: FIL2018

FileMaker Server 11

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$1598
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WebCode WIN/MAC: FIL2515

Microsoft Visual Studio 2008

Professional development software

Visual Studio 2008 provides a full-featured development environment for Windows and Web developers. Offering productivity enhancements for building data-driven client and Web apps. Individual developers looking to create connected applications with next-gen user experiences will find Visual Studio 2008 a perfect fit.

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WebCode: OTH0412



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WebCode: GPE0005



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WebCode: BSP0002



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WebCode: RDM0010



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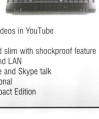
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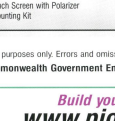


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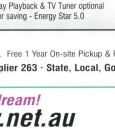


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